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ELEVENTH INTERNATIONAL VETERINARY CONGRESS.

Central Hall, Westminster, London, England, August 4th to 9th, 1930.

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Subscription for Members and Delegates: 20 Shillings.

Programme.

General Meetings.

1. Foot-and-mouth disease (plurality of viruses; immunisation, disinfection).
2. Tuberculosis (vaccination).
3. Infectious abortion of cattle, sheep and swine.
4. Relationship of the veterinary surgeon to Animal Husbandry.
5. Veterinary Science in relation to public health, with special reference to production and distribution of meat and milk.
6. The law governing the practice of Veterinary Medicine and Surgery.

Sectional Meetings.

Section I. Pathology, Bacteriology and Epizootiology.

(*a*) Variola in domestic animals.
(*b*) Anthrax. (Control of dissemination by animal products.)
(*c*) Swine fever. (Diagnosis and vaccination.)
(*d*) Rabies. (Vaccination.)
(*e*) Distemper. (Ætiology and vaccination.)
(*f*) Blackleg. (Vaccination.)
(*g*) Standardisation of biological products (sera, vaccines and diagnostic agents).

Section II. Veterinary Medicine, Surgery and Obstetrics.

(*a*) The use of drugs in the treatment of diseases caused by Nematode and Trematode worms.
(*b*) Milk fever.
(*c*) Bovine sterility (prophylaxis and treatment).
(*d*) Acute infectious mastitis.
(*e*) Diseases of the new-born.

Section III. Tropical Diseases.

(*a*) Theileriases.
(*b*) Control of trypanosomiases.
(*c*) Rinderpest (prophylaxis).

Section IV. Poultry Diseases.

(*a*) Fowlpox and coryza.
(*b*) Fowl typhoid and bacillary white diarrhœa.
(*c*) Fowl plague (vaccination).
(*d*) Treatment of parasitic diseases.

Section V. Zootechny and Dietetics.

(*a*) Genetics (principles of breeding).
(*b*) Deficiency diseases.
(*c*) Scientific feeding of animals.

From The Veterinarian, March, 1829.

Advice to Veterinary Reformers.

Suaviter in modo, fortiter in re.

To the Editor of "The Veterinarian."

Sir,—No sooner had I read the letter of one of your last month's correspondents, than I felt strong symptoms of that dangerous malady, the *cacoethes scribendi*. A man who comes boldly forward to offer hand, heart, and purse in any cause, deserves attention; and as I feel, no less than Mr. Langworthy, an interest for the advancement and respectability of the veterinary profession, I beg to suggest to him the propriety of his carefully re-viewing the evils he complains of, and their remedies. For myself, I totally disagree with his first two positions, and maintain that, "the malady clearly defined," one mode of cure should be adopted, and steadily pursued. In answer to "that which can be done to-day should not be left for to-morrow," I would call to his mind how often he has seen inflammation and death from a drastic purge, where milder physic would have brought health to the patient. For a petition to Parliament, waiving that there are more serious concerns at this moment to occupy its attention, could respectability be attained by any act of that august assembly? I think not. Nobility and wealth are in the gift of princes; but a gentleman, a man to whom the world pays willing respect, must depend on his own conduct. It appears to me, that if each individual of the veterinary profession exerts himself, is useful and honourable in his sphere; and the Veterinary Medical Society unites, strengthens, and by attrition gradually becomes the north star of the body; and last, and not least, if "The Veterinarian" continues to teem with the valuable productions which often grace its pages (and for those in the past I beg to offer my best thanks) power must be the consequence; power which, founded on a rock, will defy opposition to its will. I will not occupy more of your space than to say that my only motive for throwing these hasty thoughts on paper is to guard a valuable partizan from being led away by an *ignis fatuus*, or looking for foreign aid to do quickly what time and conduct alone can do permanently.

I am, Sir,
Your most obedient servant,
19th Feb., 1829. A Farrier.

The most pronounced movement in British agriculture in the last ten years has undoubtedly been that away from arable land towards pasture. The increase in permanent pasture means that live stock will play an even greater part in our system of farming than hitherto, for the produce of grass land can only be cashed through an animal of some sort.—*Scotsman.*

ROYAL SANITARY INSTITUTE CONGRESS AT SHEFFIELD.

Report of Proceedings of Section F.—Veterinary Hygiene.

(*Continued from page* 791).

The members of the Section re-assembled on Friday, July 19th, when the PRESIDENT said: Gentlemen, before proceeding with the ordinary routine of the morning's business, I would like, on behalf of Alderman Woolley, to make a slight explanation of a statement that he made yesterday in regard to meat inspection.

In the course of his remarks he referred to Barnsley, and gave some examples of what had occurred under his own notice, but he is very anxious that that should not be taken as being any reflection either on Barnsley or the officials connected with the work there. It was just an unfortunate thing that he mentioned the name of the place; but he was simply instancing what might happen in any locality, and he feels an explanation of this kind is due from him in order that no misconception can arise in that direction. Unfortunately, this morning he is present at one of the other Sections, and though he would have liked to be here to make the explanation himself—which he hopes will be accepted—he feels that he should be present at the other Section.

I hope that the representatives of Barnsley or others present will realise that it was a mere figure of speech, as it were, to mention one town, when it was simply an example of what might occur anywhere.

The CHIEF SANITARY INSPECTOR OF BARNSLEY: Thank you very much, Sir, and Mr. Alderman Woolley for the explanation he has given through you. I am the Chief Sanitary Inspector of Barnsley, and yesterday I took the worthy Alderman to task for his remarks. We are under a certain amount of difficulty in Barnsley, as you will realise when I tell you that we have the largest open-air market in England—on Saturdays we have 120 meat stalls in the open-air market. We have been credited and taken to task by the Butchers' Federation for being too keen on our meat inspection, and I was rather anxious to know where the Alderman got his information from. He told me he got it from a telephone engineer, so I asked him if he would kindly withdraw or make quite clear what he meant yesterday, because it not only reflected on myself and the members of my staff, but on those who are my colleagues in adjoining districts, and on the veterinary staff in this city, who do quite a lot in helping us to see that we get good sound meat in our borough. I am much obliged to him for his explanation here.

The PRESIDENT: I am very pleased to know you accept the explanation in the spirit in which it is given.—Now, ladies and gentlemen, I will call on Alderman Phené Neal to read us his contribution on "The Historic Fishmongers' Company."

The Historic Fishmongers' Company.

By Alderman PHENÉ NEAL (Corporation of London).

For the information contained in the paper I am about to read, I am indebted to my friend, Mr. C. N. Hooper, the Clerk to the Fishmongers' Company, who wrote an important article on this subject which was published in the "Port of London Authority Monthly" in March, 1928, and which I am permitted to refer to and make use of here. As to the remainder of this paper, I have to thank Mr. O'Neill, the Superintendent of Billingsgate Market, and Mr. Dunlop Young, the Chief Meat Inspector at the Central Markets, Smithfield, who kindly collated the facts which are herein incorporated.

Billingsgate is the oldest of all the markets of the City of London Corporation, and has been associated with the sale of fish from Saxon times.

It stands pre-eminent in the fishing world to-day chiefly because of its unique and central position and its undoubted serviceableness. Situated on the river Thames in the very heart of the City and of Greater London with its teeming population, its vital importance as a fish receiving centre and as a distributing centre is beyond question.

Its unrivalled demand makes it a certain outlet for both the normal and surplus landings of fish from all the fishing ports of the Kingdom, as well as from the Continent, providing as it does for a population of considerably more than one-quarter of the population of England and Wales; whilst it is unique in offering the choice of every variety of wet, dry and shell fish in season.

For these reasons, Billingsgate has practically become a National necessity in the interests alike of the producer and consumer, and it is the barometer for market prices throughout the Industry.

Its supplies vary from 700 to 1,100 tons daily, and the fact that this enormous turnover is effected in some four or five hours before the City is awake, will give some idea of the striking scene of bustle and activity which Billingsgate and its neighbourhood presents during the early morning hours, with its thousands of workers and salesmen engaged in the delivery, collection and distribution of this invaluable food supply to thousands of shops, hotels and restaurants in time for the midday meal of the teeming population of Greater London.

The fish arrives by rail from the fishing ports and by steamer direct from the fishing fleets in the North Sea. Considerable supplies are also received from the Continent, *viz.*: Denmark, Holland, Norway, Sweden, France and Belgium, whilst Billingsgate is the central distributing point for the Atlantic and Pacific frozen salmon trade of The Hudson Bay Co., Ltd., A. & R. Loggie & Co., Ltd., Oxenberg Bros., etc.

The supply to Billingsgate last year (1928) totalled no less than 246,000 tons.

FISH INSPECTION.

The task of inspecting such an important section of the people's food supply, amounting, as stated, on some days to as much as 1,100 tons, it can readily be imagined is not an easy one. Nevertheless, as is well known, this very necessary work is loyally undertaken and efficiently performed by the Fishmongers' Company to the full satisfaction of the Corporation, whose duty it is, as Sanitary

Authority for the City of London and therefore primarily responsible for the soundness of the food supply, to satisfy themselves that the inspection is both efficient and sufficient for all requirements.

THE WORSHIPFUL COMPANY OF FISHMONGERS is one of the chief of the many London Guilds, or Livery Companies as they are now called, and although few of these now exercise control over their respective trades, the Fishmongers' Company is a conspicuous exception. One of their powers is that of searching for and seizing unwholesome fish in London and the suburbs. This power is derived from a Charter dated 1604 in the reign of King James I. There is no other body in the world which exercises public duties of this nature under a Charter, and has exercised them for an unbroken period of over 300 years.

The work of their officers in this connection cannot be spoken of too highly, especially in regard to the supplies to the great market of the Metropolis, necessitating as it does close and constant vigilance. As evidence of this, it is interesting to note that of the 246,000 tons delivered to Billingsgate and its vicinity in 1928, the percentage of fish condemned was .903%, or about 1 ton in 106 tons; whilst the average for the previous five years was .841% or 1 ton in 118 tons. These totals are inclusive of shell fish which, as it will be appreciated, has a greater ratio of that condemned to that delivered than has wet fish.

In addition to the duty of inspection in and about the Market, the Company's Officers also keep a watch on retail shops, and in proper cases prosecute offenders under the Public Health Acts. It is only right to state, however, that with only very rare exceptions, the market salesmen and the fishmongers of London readily co-operate with the Company in securing that only fish in good condition is offered to the public, it being a recognised practice to surrender all fish of doubtful quality.

Another important aspect of the Fishmongers' Company's public health work is concerned with shell fish, salmon and freshwater fish. It is only in comparatively modern times that the need for exercising the most stringent precautions with regard to the sale of oysters and other shell fish has been realised, and the Company can claim to be pioneers in this respect. In deciding what oysters may be sent direct from the beds to London and marketed, the Company rely in the first place on their intimate knowledge of the oyster beds all round the coast, and their records of those beds extending for many years back. Only beds which, so far as it can be ascertained, are free from risk from sewage pollution are allowed to furnish oysters for the London market. Even oysters from these clean sources are not regarded as free from suspicion, but samples are continually being taken and submitted to analysis in the Company's laboratory by Professor Eyre, the Company's bacteriologist. Should the results of analysis in a given case fall below the Company's standards, an embargo is laid upon them and the merchant concerned is warned not to market them until investigations have been made and the reason for the falling off in quality ascertained.

The benefit of the Company's shell-fish work is not confined to London, as the Medical Officers of Health of most of the big provincial cities consult the Company on doubtful points.

Another important branch of the Company's work is concerned with salmon and freshwater fish. Thirty or forty years ago, salmon from the Scottish rivers were poached wholesale and sold at Billingsgate Market without any regard to the close season. They were also exported in considerable quantities. In 1892, an Act of Parliament was passed which gave the Company the power to seize salmon which was being illegally dealt with during the close season, and to institute proceedings against the offenders. The Company proceeded to conduct a campaign against poaching under the powers of that Act, with the result that traffic in poached fish in England and Scotland has now been reduced to a minimum. The Company had twenty-eight successful prosecutions last year (1928) under the Salmon Acts of England and Scotland and the Public Health Acts.

It is difficult to explain exactly when and how the Company came into existence, though it cannot be doubted that the Fishmongers of London were among the first of those organised trade bodies which strongly established themselves in the capital. In this connection it may be pointed out that fish as an article of diet for Englishmen held a highly important place in earlier times, and the records of the City of London contain many references to the sale of fish and tolls payable in connection with the sale thereof. Nor did English kings neglect the products of the sea as sources of wealth, for Henry III, desirous of increasing the revenues of his Queen, ordered that all fish landed from vessels in the Thames must be brought ashore at Queenhithe—a command which his successor, Edward I, who gave the charter to the Fishmongers' Company, dispensed with.

Professor Unwin, in his "Gilds and Companies of London," says that by the thirteenth century the Fishmongers were "one of the wealthiest and best organised bodies of tradesmen in the City," and he recognises that the pioneers of the London fish trade were astute men who "had got a good grasp of their special immunity before the City had thoroughly consolidated its powers of government."

There is no question but that the Fishmongers' Company existed for a very long period before the date of its first Royal Charter, granted in the reign of Edward I. In common with the other Guilds—as the Livery Companies were then called—it consisted of members of the trade who banded themselves together in an organisation for the purposes of religious observance, social intercourse and trade regulation. In common, too, with the other bodies which during the thirteenth and fourteenth centuries obtained recognition from the Crown by Royal Charters, the Fishmongers made considerable payments to the Crown.

By the time that the Fishmongers had gained their Royal Charter their Company was a wealthy one, and in 1298, on the return of their benefactor, Edward I, from an expedition to Scotland, they offered to him an imposing pageant in recognition of his prowess in defeating Wallace at Falkirk. Shortly after the birth of Edward III, the Company arranged a gorgeous water pageant on the Thames and escorted the Queen through the City with great rejoicings and much display; and when the third Edward was engaging in the Hundred Years' War with

France, the present offered to him by the Fishmongers' Company was a substantial one.

Notable among the representatives of the trade in the fourteenth century was Sir William Walworth, Lord Mayor of London and Prime Warden of the Fishmongers, who slew the rebel Wat Tyler at Smithfield in 1381. By this time the monopoly of the Fishmongers' Company was so strong that the Royal Charter granted to the Company by Richard II provided that "none but members of the Fishmongers' Company are to bring fish into the City (of London) in order that it may not be made dear by persons unskilful in the Mystery or others buying to sell again." And in another part of the same Charter it was ordained that "no man alien or denizen shall in any part of the realm meddle with the Fish Trade unless he is free of the Mystery of Fishmongers." In point of fact, the more important members of the Company at one time actually owned the fishing vessels which were operating chiefly on the east coast of England.

The accounts of the Company perished at the time of the Great Fire, but their estate title deeds go back to the reign of Edward III, and their wealth was then such that the Company maintained three chaplains or priests for the performance of religious observances, and for the services at the funerals of deceased members.

Lately, a frozen fish industry has been established in Eastern Canada and Newfoundland. One of its main features is the adoption of the quick freezing process or so-called "brine freezing." The "Ottesen" method was one of the first tried in the City of London at the Smithfield Markets. It consists of immersing the fish immediately after they are caught in a brine solution at low temperature (at or below 10° Fahrenheit). The success in keeping fish appears to best described in the words, *viz*: "freeze fish fast" and as soon as possible, after they are caught. By so doing, the tissues are preserved without any disintegration, and a valuable food can be provided in a reliable condition, and at a reasonable cost without loss to those who labour to produce it. The old method of preserving by using ice in the packing is unsatisfactory, and "air freezing" is said to be unsuitable, as the tissues are generally broken down, and when thawed out the fish are soft and without flavour when prepared for the table. I am not like Mr. Hattersley—an expert—but I believe I am right in stating that "brine frozen" fish keep better than "air frozen" fish; also that one can tell the difference between a quickly frozen fish and a slowly frozen fish in that the latter will break while the former will bend, and a person cutting the fish with a knife or hatchet finds that the slowly frozen fish cuts like "stone," whereas the quickly frozen fish cuts like compact soap. Again, if the surface of a quickly frozen, thawed-out fish is pressed with the finger, the depression caused will disappear or, in other words, "come back," because the cell structure is not destroyed, but the depression made in a slowly frozen fish will remain.

It is to be hoped that this new method of preserving may assist the fishing industry not only in this country but in Canada, where the frozen salmon trade is an important one. The export of frozen salmon from Eastern Canada in 1925 was 400,000 lbs.; for this year the amount is estimated to be 3,000,000 lbs., and Newfoundland's supply of halibut and smelt is also becoming very important.

The PRESIDENT: Ladies and Gentlemen, I am sure that you, like myself, have listened with very great interest indeed to this able address by Alderman Phené Neal. Probably many of you, like myself, at one time regarded the large City Guilds as more ornamental than useful, and I think it is a very excellent step that we should have had that misconception so efficiently removed as has been done this morning by Alderman Phené Neal. When one realises that the Fishmongers' Company has to overlook and to control such large quantities as over 1,000 tons of fish per day that has to be transmitted for human consumption, and to see that it is fit and safe for consumption, I think the activities of that body cannot be over-estimated. In fact, it is a marvel that such quantities can be efficiently handled by the one organisation.

I do not think you wish to hear much more about that, but I think you will agree with me when I say we owe to Alderman Phené Neal our grateful thanks for the very able and interesting address he has given us on this subject, and I ask you to join with me in according to him that thanks now.

[The motion was heartily carried.]

Alderman PHENÉ NEAL: Mr. President, Ladies and Gentlemen, I thank you very much indeed.

The PRESIDENT: There is one other point to which I should like to refer before asking Mr. Hattersley to give us his paper, and that is the unfortunate arrangement—at least as it appears to many of us—of the Sections and the subjects for to-day. There is another Section meeting on the Hygiene of Food, in which papers are being given which would have been most interesting to many of us, and we should have liked to be present to hear those papers, and possibly to take part in the discussions on them; but we have to be here as well, and naturally we are under the same ban as all other human beings in that we cannot be in two places at one time. I think we might perhaps—if the meeting agrees—send a recommendation to the Council of the Institute asking that, if it is possible, the Sections on Hygiene of Food and on Veterinary Hygiene, which deal so largely with the same subjects, should be arranged so as not to overlap. I wonder if that meets with the approval of most of the members of the Section present?

[Agreement was signified.]

A DELEGATE: I think the same thing occurred last year. Hygiene in Food clashed with Veterinary Hygiene, and we then sent a recommendation to the Council that it should not happen again, but apparently it has.

The PRESIDENT: In reply to that, Mr. Hayhurst, the Recording Secretary says he does not recollect its being sent from *this* Section. It possibly was sent from another Section.

The DELEGATE: From the Sanitary Inspectors' Section.

The PRESIDENT: I see. I think if this Section repeats the protest and endeavours to hammer it home, we may be able on future occasions to attend both those Sections. Those in favour of such a resolution going forward?

[Unanimous agreement was recorded.]

The PRESIDENT: I will ask Mr. Hayhurst to convey that protest to the Council, and ask if it is possible for it to be remedied on future occasions. That will be brought before the Council meeting to-day in the ordinary course. I will now ask Mr. Hattersley to give us his paper on "The Inspection of Marketable Fish."

Inspection of Marketable Fish and How to Distinguish the Various Species of Fish.

By CHARLES HATTERSLEY,
Chief Inspector, Fishmongers' Company, London.

I think this is the first time that a paper on the subject of "Fish Inspection" has been introduced into the Veterinary Section of any previous Congress meeting in connection with the Royal Sanitary Institute.

Under the circumstances, I feel there may be some differences of opinion as to the utility of such a subject being introduced into this Section; some may approve, some may not, but all I am required to do is to carry out the wishes of those responsible for arranging this Section's work, and to try to make my paper appeal to those who, as yet, may not see how it is going to benefit the Veterinary Section.

Amongst my audience here this morning there may be medical officers of health, heads of public health departments, veterinary inspectors who act as chief food inspectors, also food inspectors and sanitary inspectors, who might be anxious to pick up a few points on this particular subject, so as to aid them further in their work; therefore, after all, it may be possible for some of you to get some practical knowledge which I hope may be helpful in the future.

Many of you have no idea of the magnitude of the fish trade of this country, or the supplies of fish dealt with annually in England and Wales. I will, therefore give you a brief extract from a statement issued by the Ministry of Agriculture and Fisheries for 1928.

During the past year there were landed on the shores of

England and Wales	13,443,626	cwts of fish
Received from Scotland ...	6,603,778	,, ,,
Direct from foreign grounds ...	1,439,885	,, ,,
From Norway	913,338	,, ,,
,, Denmark	351,582	,, ,,
,, The Netherlands ...	211,438	,, ,,
,, The Irish Free State ...	139,876	,, ,,
,, Other countries ...	361,701	,, ,,
Making a total of ...	23,465,224	,, ,,

Shellfish :—

Crabs	6,485,700 cwts.
Crawfish	67,600 ,,
Lobsters	850,900 ,,
Oysters	8,057,700 ,,

Other shellfish, comprising mussels, cockles, winkles, whelks, escallops, shrimps, etc., 512,023 cwts.

The whole of a total value of £22,756,655.

Of this weight of fish there were delivered at Billingsgate during 1928, 4,780,480 cwts. of fish, an average of 15,521 cwts. of fish per market day (this is, of course, deducting Sundays and Bank Holidays).

As every large city or town is a distributing centre for all kinds of foodstuffs, including fish, each town will have its quota of fish according to the population it has to serve. Therefore the inspection of fish is just as important as the inspection of meat from a public health point of view, but as a large number of inspectors have not had, or cannot get, facilities for obtaining much practical knowledge in fish inspection, the Worshipful Company of Fishmongers have had sent on specimens of fish so that I may demonstrate to you later how to distinguish the various species of fish; for the only way to get practical knowledge is by way of demonstration.

It might be surprising to you to know that there are between forty and fifty different species of edible fish consigned to our markets, and the inspector, before he gives an opinion on the condition of any fish he may have to examine, should be as conversant with the names of the various species of fish, as he is with the joints of beef in a butcher's shop; and be able to tell, almost at a glance, what fish he is examining, the general condition, whether fresh or stale, saleable or unsaleable.

At this juncture, one or two of the more salient points, touching upon the condition of fish, may be useful in passing. There are times when we get on our markets what may be termed foul-gutted fish; fish that has not been properly gutted—bits of gut and liver left in the viscera or gut cavity; these, of course, rapidly decompose, affect the soundness of the fish, and at times may be responsible for the condemnation of quantities of fish, particularly Norwegian and Iceland. Care taken in the gutting of fish, also the packing, cleanliness of packages, or, better still, non-returnable packages, fish well iced and quick transit in proper vans, all tend to ensure fish arriving in a good marketable condition. While, on the other hand, if we get careless packing and they neglect to ice the fish properly, just putting a sprinkling of ice on the top, this is false economy, because at times, particularly in hot weather, we find fish at the bottom of boxes may be sour and unfit.

We have also found fish contaminated by being packed in dirty packages; those responsible for the packing may be careless as to the importance of this, or they may be of the opinion that so long as the fish is washed it is all right; or a further menace to good quality fish are long railway journeys in vans or trucks, with little or no protection from unsuitable atmospheric conditions.

These are just points which may be primarily responsible for the condition or the general appearance of good or bad fish which may arrive from the coast.

On the markets perhaps you may have noticed, also, that fish is not always in the same condition; there are times when cod, haddock, coal fish, ling and other fish of the round variety may appear in perfect condition, perfect in shape, well-fed, plump and firm; there are other times, although the fish is perfectly fresh, when it may appear, as it lays on the slab, ill-fed, more triangular in shape than round, flesh rather flabby to the touch, or the flesh may appear watery. These changed conditions come about, and are the result of the spawning season: the milt and roe being made up at the expense of the flesh and tissue, therefore the flesh cannot be in perfect condition during the spawning stage.

For your information I will give you the approximate spawning time of some of these marketable fish, so that if at any time your fish is not in perfect condition, reference to this list might explain the cause.

Fish.	*Spawning time.*
Turbot ...	April to August.

Fish.	*Spawning time.*
Brill	April to June.
Sole	March to June.
Catfish ...	November to January.
Coalfish ...	January to May
Cod... ...	February to April.
Dab	February to June.
Dory ...	June to August.
Flounder ...	February to June.
Haddock ...	February to April.
Hake	March to June.
Halibut ...	April to May.
Lemon sole ...	April to August.
Ling	March to July.
Mackerel ...	May to June.
Megrim ...	March to May.
Plaice ...	January to May.
Pollack ...	February to April.
Tusk	April to June.
Whiting ...	February to June.
Witch... ...	May to August.

You might say here "How am I to tell good fish at a glance?" It is not a every difficult matter for an inspector who takes an interest in his work, to train the eye and the mind on fish inspection. If you make a point of observing fish in any fish shop, as it lays on the slab, or by visiting fish markets occasionally, you will get accustomed to seeing fish in different conditions of freshness. Perfectly fresh fish will appear very bright, as if there was yet some life left in it, and always have, as it were, a coating of fresh slime over it. The eyes will be bright and full, the gills a good red colour, it will be firm to the touch, and the gut cavity will be clean, free from any offensive smell; in fact, fish, when fresh, looks attractive.

Stale fish generally looks dull and lifeless, has a washed-out appearance, eyes dull and sunken, very limp, flesh soft, gills often a dirty colour, chest walls very much discoloured, and the smell offensive.

If you see fish of this description, apparently stale, and yet you have your doubts, you should examine it.

In making your examination, study the general conditions, eyes, gills, condition of chest walls. If the fish is of the large variety, such as cod, ling, hake, tear up the sound, and examine the condition of the blood underneath along the bone: this will be a good guide, for if the fish is fairly fresh, the blood will be a good natural colour and firm; if stale, the blood will be a bad colour and more like dark pus.

Then, if any doubt still exists in your mind, take a knife and split the fish. If stale the flesh will leave the bone quite easily. If you examine the bone, and you find that it is gradually going pink up the centre from the tail upwards, it is a sure sign of decomposition. Above all, don't be afraid to handle the fish—you can always wash your hands. The way you handle fish when making an examination or inspection for any fishmonger has a great deal to do with one forming an opinion whether an inspector knows his work or not. If handled in a business-like manner, and you know what you are examining, he will have confidence in your judgment. If you seem to resent handling it, ask him what he calls it, or you call ling, cod; coalfish, hake; lemon sole, plaice; herring, mackerel—then of course he will have his doubts as to your ability to judge fish for yourself.

As many of you inspectors may have to deal with fish exposed for sale, either in markets, fish shops, or fried fish shops, and have to depend upon your judgment first hand, that is why I wish to impress upon you the importance of having a good knowledge of fish, so that you may do your duty with confidence. I, therefore, ask you to make yourselves thoroughly acquainted with fish and fish inspection; it will be time well spent, and no doubt much good will accrue.

The Salmon.

Salmon is of very great commercial value, and I regret that I cannot give you the total quantity of fish caught and disposed of in England, but I can give you the number of packages that passed through Billingsgate Market during last season:—

English salmon	4,627	packages
Scotch ,, ...	9,154	,,
Irish ,, ...	9,178	,,
Dutch ,, ...	119	,,
Norway ,, ...	1,454	,,
French ,, ...	125	,,
Danish ,, ...	26	,,
Baltic ,, ...	830	,,
		,,
Making a total of ...	25,513	,,

Taking each package as 80 lbs. average weight, we get a grand total of 2,041,040 lbs. Now try and calculate the deliveries of salmon at other large markets in England, such as Liverpool, Manchester, Birmingham, Leeds, Leicester, Nottingham, etc., and then you will have some idea of the magnitude of the salmon trade.

The salmon, like all the genus, has an adipose dorsal fin, that is, a small soft fin near the tail, and I might point out here, that any fish that has the adipose fin, although some live entirely in fresh water, must not be confounded with the ordinary fresh water fish, or what are termed coarse fish, because the close time for fresh water fish, which is between the 14th March to the 16th June, does not apply to them. It applies to pike, perch, bream, roach, carp, dace, tench, chub, gudgeon, etc.

Now the reason for a close time for salmon trout and fresh water fish is, of course, to protect the particular species of fish to which the close time applies. The close season for salmon is between August 31st and February 1st, and for trout between August 31st and March 1st.

The salmon is anadromous, that is, lives both in the sea and in fresh water. Salmon, when first hatched, are known as alevin; in a few months they become what is known as salmon parr, and are then distinguished by a kind of bandmarks on the sides. In the second or third spring the parr marks gradually disappear, and they become very silvery from the head downwards; they are then known as salmon smolt. At this stage, they make their first trip to the sea, during which time they develop and grow very quickly, and in the following year return as grilse, after spawning for the first time; and when it next returns again from the sea it comes up as salmon, and a very peculiar feature is that salmon return to the same river from which it first reached the sea. So much for

salmon in its various stages, now you may want to know when a salmon is unclean, or the definition of an unclean salmon.

An unclean salmon is defined by the Salmon and Fresh Water Fisheries Act, 1923, Section 92, as a fish about to spawn, or which has recently spawned and has not recovered from spawning. During the spawning season, the male salmon develops a prominent hook on the lower jaw, and the head may be spotted or streaked with orange. The female becomes dark or dusky, the abdomen will appear heavy with roe—carrying about 1,000 eggs per pound of its own weight. After spawning they are known as kelts, and appear somewhat thin and emaciated, the vent being very much distended, and it is at this stage, while the salmon are making their way to the sea after spawning, that they are often taken by poachers, consigned to various markets on the off chance of their being sold. Therefore it is during the close time, between August 31st and February 1st, that inspectors ought to be on the look out, and take every opportunity of seizing such salmon, with a view to the offenders being prosecuted and convicted. If any of your authorities are not conversant with the procedure after a seizure or detention, a letter giving full particulars of the seizure to the Clerk of the Fishmongers' Company would receive prompt attention, as they would have enquiries made in the district where the salmon was caught, and in all probability the offenders would be traced and prosecuted for the offence.

It is also an offence to take an immature salmon, which is a salmon measuring less than 12 in. in length. Also an offence to sell or expose for sale, any rod-caught salmon, during the close time for nets. During the year 1928 the quantities and values of the imports of salmon fresh or frozen into Great Britain and Northern Ireland were 77,362 cwts., value £584,452.

I might mention here that the Salmon and Fresh Water Fisheries Act, 1923, has just been amended by the Salmon and Fresh Water Fisheries Amendment Act, 1929.

Section 32 of the 1923 Act, which prohibits the sale of any trout between August 31st and March 1st, was amended on the 10th May of this year by making the sale of trout permissible if legally taken by any net, instrument or device other than rod and line, at the time and place where it was caught. The burden of proving that any trout was bought, sold or exposed for sale between the 31st August and 1st March following, shall lie on the person buying, selling or exposing for sale or having in his possession for sale such trout.

This means that trout can now be dealt with in the same manner as salmon, but the person in possession of such trout must be in a position to produce a certificate or give some tangible proof that such trout was legally caught by net.

There are several districts in Ireland where trout can be legally taken up to October 1st.

In Scotland they can take trout up to October 15th.

Therefore, the sale of trout from these districts is now legal in England during the close time so long as they can produce proof of legal capture.

The Oyster, Crab and Lobster Act, 1877, deals principally with the taking, buying or selling or exposing for sale any undersized crabs, measuring less than 4½ inches across the broadest part of the back, any edible crab carrying spawn attached to the tail, or other exterior part of the crab, whether known as berried crab, spawn crab, seed crab, or by any other name, or any edible crab which has recently cast its shell, and known as a caster, white crab, white-footed crab, soft crab, glass crab, or by any other name.

I want for a few moments to deal with the last paragraph about soft-shelled crabs, because I know that a good many inspectors are unable to understand the term soft-shelled, which is very important and interesting. A soft crab may mean a crab which has recently cast its shell and is soft to the touch, or it may mean a crab whose shell is thin and very brittle, like the shell of an egg.

Now I would point out that the shell of the crab does not grow along with the body of the crab. The crab is encrusted with a hardened and inelastic shell, composed of carbonate and phosphate of lime, and chitine, and as its body is not able to grow like any other creature, it has periodically to cast its shell. About the time of casting they seek shelter under the ledges of rocks, etc., they then commence the process of loosening the skin covering the internal viscera, and when loosened from the shell they make a supreme effort and burst the shell, which splits on the underside of the body, along a line which is marked very plain in the shell of a full-grown crab, and it is recorded of a crab casting a shell measuring 3⅞ inches, that the crab which came out of the shell measured no less than 5 inches; thus the new shell, when formed, is from 1 inch to 1½ inches larger every time it casts its shell up to the adult stage.

Of course, there must be a limit to the process of shell-casting, which is proved by crabs having been taken with small oysters about two years old attached to the shell of the crab, also some with a kind of barnacle attached, which goes to show that as the crab gets older and larger the shell is cast less frequently. It is estimated that a crab 4½ inches in length is about three years old, and a crab when spawning carries about 1½ million eggs.

The same Act applies to lobsters, which must not be taken, sold or exposed for sale measuring less than 8 inches in length, from the tip of the beak to the end of the tail when spread out flat.

The lobster, crawfish and crayfish also cast their shells, and if you examined a lobster very closely you would find a line along the barrel of the lobster, which splits when casting, and enables the lobster to leave its shell.

Native oysters, that is, the small, flat-shelled oyster, must not be sold between the 14th May and the 4th August, and deep sea oysters between the 15th June and the 4th August.

The Act does not apply to any oysters imported from a foreign state, such as Dutch natives, American blue points or Portuguese oysters.

Dealing briefly with the pollution of shellfish—it is impossible for any inspector to tell by the general appearance when shell fish is polluted, and it is only possible to obtain this information by bacteriological analysis, or topographical inspection.

The greatest danger to public health arises from oysters and mussels being consumed in a raw state, and cases of illness have been traced in several instances to the consumption of mussels taken from polluted areas. Upon

complaint enquiries have been held, with the result that several of the mussel fisheries have been closed—no doubt in the interests of public health, but unfortunately to the detriment of the fishermen, many of whom have been practically deprived of their livelihood, as some of them almost depended entirely upon the mussel trade. Our markets have also been affected inasmuch as it has stopped the sale of hundreds of bags of English mussels during the season.

There was a very large trade done formerly in mussels from Morecambe Bay, Glasson Dock, Lytham, St. Annes, Fleetwood, Millom and Lympstone, but on account of pollution these places have been closed.

But the Ministry of Agriculture and Fisheries perfected a system of purification, whereby mussels, however much they may be polluted, can be thoroughly cleansed and made fit for human consumption in about forty-eight hours. This I can testify, having taken samples for analysis before and after purification.

This process of mussel purification has been carried on at Conway for a considerable period, with very great success, and if these purification stations could be installed in other areas where large quantities of mussels could be cultivated, it may be the means of resuscitating the mussel fisheries, not only to the benefit of the fishermen, but be the means of putting a valuable food again on the market.

The purification is carried out by a series of tanks constructed as near the fishery as possible. The tanks should be built on a bank or hillside and constructed in three sections, one tank above the other, the top tank for the purpose of storing the fresh sea water, which is pumped up into this tank, when it reaches a certain specific gravity or salinity.

The second tank or middle tank is for the purpose of storing or mixing a chlorine solution, which sterilises the sea water for the purification of the mussels, the quantity of chlorine being supplied from a small separate vat from which the chlorine solution drips into the inflowing stream of water from the top tank, and being so regulated as to give out just the necessary quantity of chlorine required—three parts of active chlorine to 100,000 parts of water. The lower tank, or tanks, is, or are, used for the sterilisation of the mussels. On the floor there are wood grids for the purpose of laying out the mussels to be sterilised.

When the mussels are laid on the grids they are thoroughly washed with town's water through a hose, then the washings from the mussels under the grids are cleared by flushing with sterile water, and when all is cleared out to the satisfaction of the superintendent, the penstocks at the outlets are closed, and the sterile water is run into the lower tank; at the same time drips of water passing through thiosulphate of soda intermix with the sterile water; this gets rid of any active chlorine which may remain in the sterilised water. This process is repeated a second time.

The purification process takes approximately forty-eight hours, then, after a final washing, the mussels are marketable. One fact worthy of note is, that these mussels are packed in sterilised bags, as the bags are thoroughly soaked in a solution of bleaching powder, the available content of which is 1 in 10,000 parts. And finally, after bagging, they are sealed with a lead seal bearing the date; this is a guarantee that the mussels have been purified.

While approving of this system of purification, it is questionable whether it could, in all cases, be made a universal success, on account of the cost, although I think that Conway is now self-supporting, and will continue so if they can rely upon the quantity of shell fish to purify—8,000 to 10,000 bags of mussels per season at a cost of 1s. 6d. per bag, which covers wages, interest on capital, depreciation, power, chemicals, general stores, etc., and a further revenue may be had if the tanks could be used for swimming or bathing purposes when not in use during the summer months.

Of course, every fishery would have to be considered on its merits, according to the quantity of mussels it could produce, but if the quantity of mussels cleansed would not pay the expenses of a purification plant, the authorities responsible for the pollution should, in my opinion, take a share of the financial responsibility along with the fishermen.

I give you this brief description of the purification system now in operation at Conway, as there may be representatives here from some closed areas, so that if any local authorities are desirous of obtaining further information, there is published a Special Report on Mussel Purification by Dr. Dodgson, Director of the Ministry's Shellfish Research Station at Conway, and a copy can be had from His Majesty's Stationery Office, Kingsway, London.

I think I have now dealt with the main points of interest regarding inspection, and it is now my pleasure to demonstrate to you how to distinguish the various species of marketable fish.

[For the benefit of our readers we reproduce here the list, prepared by the Fishmongers' Company, which embodies most of the points made by Mr. Hattersley in his demonstration.—ED.].

Distinguishing Features of Fish.*

I.—Round Fish.

Body cylindrical, or but feebly or moderately compressed.

COD FAMILY.

COD.

The body of the cod is thick and rounded near the head, but tapers off suddenly towards the tail. It is of a greenish or brownish olive colour with numerous yellowish or brown spots. It has a white lateral line, and the upper jaw is the larger, and there is a barbel on the chin. Three dorsal, two pectoral, two ventral (jugular), two anal fins. *Northern Seas, Faroes, Iceland, Dogger Bank and westward of Scotland.*

HADDOCK.

Similar fish, but smaller, and distinguished by a black lateral line and a large blackish spot above the pectoral fin, so-called finger and thumb marks. It has a small barbel on the chin. The colour is darker, and when caught the fish is of a beautiful bronze colour. Three dorsal, two ventral, two pectoral, two anal fins. Rather large scales. *Fishing grounds as above for Cod.*

WHITING.

Smaller than the haddock; head and body compressed, the deepest part at the vent, which is opposite the middle of the first dorsal fin; eyes moderately large; no barbel

* List prepared by the Fishmongers' Company, London, for the information of Students, etc., studying the history of various Food Fishes to be seen in various markets.

on chin ; scales small and silvery, of a dusky yellow colour, the sides paler, belly silver white ; a black spot on the upper side of the root of the pectoral fin. There are three dorsal, two pectoral, two ventral, two anal fins. *British Isles, all round the Coast.*

COALFISH.

A fish similar in size to the cod, of a dark slate-blue colour, almost black on the back and sides, graduating to grey on the belly ; scales large. The lower jaw is slightly longer than the upper. White lateral line. Three dorsal, two ventral, two pectoral, two anal fins. Usual length two to three feet. *Most plentiful on the Northern Coasts of Scotland, Shetlands, Orkneys, and the East Coast.*

POLLACK.

Similar to coalfish, and is of a dull green colour, belly obscurely white. *West and South-West Coasts.*

LING.

An elongated fish with very minute scales and two dorsal fins, edges tinged with grey, the first high and short, the second very long, extending almost to the tail. Has a long barbel on chin. The colour is usually grey on back with white belly. *Most plentiful in the northern parts of the North Sea, and off the North-West Coasts of Scotland and Ireland ; also at the Faroes and Iceland.*

TORSK.

The body is shaped something between a cod and a ling, having one long dorsal fin and one long anal fin ; barbel on the chin ; the skin is thick and tough, with minute scales. Colour on the back greyish, tinged with yellow, which colour is more pronounced on the margin of the fins. Usually about two to three feet. *Northern Seas.*

HAKE.

Another elongated fish. Has no barbel but, unlike the ling, has large scales and large mouth with exceedingly sharp teeth. Colour, dark grey on the back and slightly lighter on belly. Two dorsal, two pectoral, two ventral, one anal fin. *West and South Coast of England to Mediterranean.*

BLENNY FAMILY.

CATFISH OR WOLF FISH.

Of a bluish grey colour. Smooth skin. Head resembling an ugly cat, with a group of long canine teeth or fangs : behind these is a double row of molar teeth, which are very useful to grind the numerous shell-fish on which it lives. A species of catfish comes from the White Sea, and is spotted like a leopard. *North Sea to Iceland.*

MULLET AND GURNARD FAMILIES.

GREY MULLET.

Rounded body, covered with large round smooth scales and silvery grey in colour. Two short dorsal fins, the front one composed of four spines. The anal fin is opposite the second dorsal fin. They have very feeble teeth or none at all, and there is no lateral line. *Most abundant on the South and South-West Coasts : most plentiful in Autumn and Winter.*

RED MULLET.

Has rather a round body with large thin scales firmly attached to the skin, and is bright red in colour. Two dorsal fins. The head has a front surface sloping down to the flat under-surface and the jaws and mouth are at the lower part, and beneath the chin are two long stiff barbels. Size about 6 or 8 inches in length. *Most abundant on the South and South-West Coasts, especially Cornwall and Devon.*

GREY GURNARD AND RED GURNARD.

Gurnard species, in which the head is strongly armoured with bony plates, and has an angular wall-sided shape ; spines along the lateral line and along the basis of the dorsal fins. The lowest three rays of the breast fins separate and independently movable, used as fingers. Dark grey or red in colour. *Common all over the North Sea, as well as on the British and Irish Coasts.*

MACKEREL FAMILY.

MACKEREL.

The mackerel is one of our best known fishes, highly valued for the table. It has two dorsal fins, behind which are five finlets ; one anal fin, behind which there are also five finlets ; two pectoral and two ventral fins ; tail fin concave. The colour of back is a varying blue tinted with green, but darker on the head ; pearly white along the belly, reflecting tints of purple and crimson, which soon pass off after death. A series of irregularly waved stripes of a much darker colour pass from the back downward and obliquely forward, ending above the lateral line and usually from the pectoral fin to near the tail. There is an obscure row of dusky spots, and behind the eye a light yellow tinge. *English : Most plentiful on the South Coast ; taken also on the South-East and South-West Coasts and North Sea. Irish : Principal centres—Kinsale, Baltimore, Union Hall, Castletown-Berehaven, Bantry, Valencia Harbour, Dingle, Arran Islands (Galway), Roundstone. Cleggan.*

SEA PERCH FAMILY.

BASS.

The head and body are compressed, and the latter not so deep as in the generality of this family of perch-like fishes, but muscular and strong ; covered firmly with scales, as is also the gill-cover ; the gill-cover terminates into two blunt spines. Eyes of moderate size. Lateral line slightly descending, and then straight. Dorsal fins two, in a depression on the back ; the first with strong, spinous rays, of which the first, and sometimes also the second, are short ; anal fin slightly behind the second dorsal. Tail fin concave. Colour a bluish grey on the back, lighter, silvery on the sides, white below. *West Coast of England and Wales.*

SEA BREAM.

These fish have a deep plump body, large scales, and the colour is usually red on back and silvery on the sides. This fish also has the thumb and finger mark. A single dorsal fin, of which the front part is supported by strong spines, while the hinder part has soft fin-ways. *South and West Coasts of England and Ireland.*

HERRING FAMILY.

HERRING.

The ventral fins behind the commencement of the dorsal, which commences midway between the tip of the snout and the base of the tail. Scales of moderate size, thin and deciduous ; spines on the belly weak, the edge of the belly rather blunt. No radiating lines on the gill-cover. Small, easily detached teeth on the jaws, on the roof of the mouth, and on the tongue. The hinder end of the upper jaw is beneath the middle of the eye. The colour is more distinctly greenish-blue than in the sprat. *All round the Coasts of England, Scotland and Ireland ; also Norway.*

SPRAT.

Dorsal fin a little farther back than in the herring. The ventral fins very slightly in front of the commencement of the dorsal. Scales of moderate size, edge of the belly very sharp, and the spines on it strong. No radiating lines on the gill-cover. *South-West, South, and East Coasts of England.*

PILCHARD OR SARDINE.

The dorsal fin nearer to the snout than to the root of the tail. Ventral fin behind the commencement of the dorsal, last two rays slightly prolonged. Teeth in the jaws very minute or absent. Radiating lines on the opercular bone and beneath the eye. Upper jaw reaching back to the front of the eye. Scales larger than in any other British species of the family, only thirty in the whole length of

the body, easily detached. Spines on the edge of the belly weak, and the edge itself rounded; the whole form of the body is rounder than in the herring or sprat, and not so deep. Colour on the back olive green, rather deep, sides silvery. *English Channel to Mediterranean Sea.*

SHAD.

In shape it differs from the herring in being deeper in the body. Head and body compressed, the latter covered with rather large scales to the root of the tail. Eye moderate; plate on top of the head flat. The gill-covers adorned with radiating branched lines. The usual hooked serrations along the line of the belly. Dorsal fin over the ventrals, with twenty rays. Colour of the back blue, upper portion of the head brown; light golden tints on the gill-covers and about the upper parts round the eye, tints of blue and pink reflect on the sides, silvery below; a large black spot close behind the upper border of the gill-covers.

SALMON FAMILY.

SALMON.

Salmon is one of the best known of fishes; it is a long round fish, has ventral fins, abdominal, opposite the first dorsal, and a rayless (adipose) fin opposite the anal. It is of a bluish black colour on the back, graduated to white under the belly, and is covered with small bright scales. It should cut a beautiful red colour if in perfect condition. *British Isles, Norway, Sweden, France and Holland.*

SALMON TROUT.

This might be taken in mistake for salmon, yet in its aspect there is a difference between them. It is much smaller than salmon, is comparatively stouter, and carries its bulk more towards the tail. The mouth is longer in proportion than that of the salmon. Colour of the upper parts dark, with a tinge of blue, a tinge of pink on the cheek and along the side. Whitish below, some rather shot-like spots on the gill-covers, and the ventral fins rather light. Scales much smaller. *British Isles, Norway, etc.*

COMMON TROUT.

This trout is the commonest fish in our rivers. The back is of a yellowish or reddish brown; cheeks and sides grey or a rich yellow, white below. Gill-covers often sparsely spotted, as is the dorsal fin. The sides are studded with dark spots, and red spots along the lateral line, some above and some below. Is also covered with small scales. *Rivers in British Isles.*

SMELT.

A small fish with scales of moderate size. Colour of a light olive green on the back and silvery on the belly, with iridescent colours on the sides, and along each side there is an especially distinct broad silvery band, lighter than the rest of the side. Usually about 8 inches in length. *English and Scotch Coasts: also Holland.*

GRAYLING.

The grayling has from twenty to twenty-four rays in the first dorsal, which is very high; the second dorsal is adipose; there are from eleven to fourteen rays in the anal, twenty-one in the caudal, fifteen or sixteen in the pectorals, and ten or eleven in the ventral fins. The ventrals are under the middle of the dorsal, and small; the anal is under the adipose dorsal. The scales in the lateral line number from seventy-five to eighty-five. The back is more curved than the abdomen; the shape is slender and graceful; the upper jaw is the longer. The head is bluish. the back golden, with parallel grey lines along the side; the fins are banded and spotted with purple. *Rivers of England and Northern Europe.*

STURGEON FAMILY.

STURGEON.

The sturgeon has the dorsal fin close to the tail, in it there are from thirty-five to forty rays, the anal having from twenty-three to twenty-five rays, the ventrals have twenty-three or twenty-four rays. The pectorals are placed very low and close to the gills, and the anal is close to the tail, its base beginning under where that of the dorsal ends. The ventrals are in the tail end of the body, a little further in front of the dorsal than the dorsal is of the anal. The characteristic bucklers, or plates, number from eleven to thirteen along the back, twenty-three to twenty-six along the side, those along the abdomen being less conspicuous and varying greatly in number. The mouth is fleshy, protractile. Teeth none. The snout is pronounced, and often half as long as the head. In colour the sturgeon is olive, greenish, or yellowish, as the case may be. *Coasts of Europe, entering rivers.*

EEL FAMILY.

EEL.

The eel has a long flexible body, with the dorsal, caudal, and anal fins joining, forming one long fin, extending from about a quarter the length of the body from the snout to the middle of the body underneath. The lower jaw is longest, lips fleshy, cheeks full, eyes small, opposite the end of the mouth. Surface of the skin slimy and soft. In colour the eel is dark olive green above and whitish or yellowish below. *British Isles, and all over Western Europe.*

CONGER.

The general form is round, like that of the eel, long, slender, flattening towards the tail. Gill openings large. Dorsal fin commences close behind the breast fin, and continues into the anal round the end of the tail. Mouth wide, the upper jaw slightly longer than the lower. Colour dark above, and light or white beneath. White spots mark the openings of the lateral lines. Dorsal fin edged with black. *Common around British and Irish Coasts; most plentiful on South Coast.*

II.—Flat Fish.

Body laterally compressed, asymmetrical.

FLAT FISH FAMILY.

TURBOT.

With bony tubercles among the scales. Eyes and dark colour on left side. Average length 17 inches. Distinguished from brill by the greater breadth of body in proportion to the length, and by the presence of scattered large bony blunt tubercles. *Found all round our Coast; most abundant on the Eastern grounds off the Dutch and German Coasts and in the Channel.*

BRILL.

Like a turbot, but without tubercles. Its eyes are on the left side and the pectoral fin of the blind side smaller than the other; longer than the turbot in proportion to its width. Colour in the dead fish dark and uniform, in life variable and speckled; lower side white. *Most plentiful in the Southern parts of the North Sea and on the Dutch and German Coasts.*

HALIBUT.

This fish has a smooth skin, in colour olive or dark brown on the right side, white and sometimes mottled on left. Large mouth and teeth on both sides of the jaws. Eyes on right side. The body is thick and narrow, approaching to the shape of an upright fish. Dorsal and anal fins rather narrow, especially in front and behind, both end at some distance from the tail. Grows to an enormous size. *Caught off East Coast of Britain, Iceland, and Faroe Islands, and in almost all Northern Seas.*

SOLE.

The chief peculiarities of the sole and other kinds resembling it are the narrow oval shape of the body, presenting in every way a regular curved outline, and the character of the head. The mouth is not at the end of the snout

but below it, and the jaws are curved, not straight. The outline of the snout is semi-circular, and the dorsal fin commences on it in front of the eyes, which are small. No bones are visible on the head, the scaly skin extending over all parts of it equally. The common sole is distinguished from others by the following points:—Pectoral fins on both sides of considerable size, that of the upper side with a black spot at its outer end; nostrils on the two sides similar. Colour brown or greenish brown, with rows of darker blotches along the centre of the upper side and along basis of the fins. *Most plentiful in the Southern parts of the North Sea, in the Channel, and on the South-West Coast.*

LEMON SOLE.

Shape oval with small head and mouth. Skin smooth and slimy, and colour on right side a rich brownish-yellow, with round and oval spots of darker colour. Has small smooth scales more developed than in the plaice, and extending all over the body and head and on the fin-rays on the upper side. *Most abundant in the Northern parts of the North Sea, in somewhat deep water and near rocky ground.*

PLAICE.

The colour is brown with a number of orange or red spots on the right hand side. Eyes also on right side. Rough bony knobs on the head. Shape oval. Lower jaw longer than the upper. The teeth are peculiar, being broad and flat and ending in straight edges. There are also rounded crushing teeth in the throat. Scales small and embedded in the skin. *Plentiful all round the Coast, especially in the South-eastern parts of the North Sea, the Fisher Bank, Dogger Bank, etc. Supplies also come from the English Channel, Irish Sea, Iceland, and the White Sea.*

WITCH.

Head and mouth smaller than in the plaice. Eyes larger. Body elongated and regularly oval in outline, very thin and flat. In colour this fish is pale brown on one side and a smoky white on the other. The dark skin is much thinner than that of the sole. *Caught in North Sea, West Coast of Ireland, and Scotland.*

DAB.

To be recognised by the rounded curve of the lateral line above the pectoral fin, and the roughness of the skin due to the spiny scales. Eyes on the right side, and in colour the fish is light brown, and in shape similar to a plaice but usually smaller in size; no spots on the back.

MEGRIM.

This fish has a large mouth, a large head and large eyes, and a rather narrow, thin, and pale body. The teeth equally developed on the two sides, small, in two rows. The eyes are on the left side, as in turbot and brill. The curve of the lateral line above the pectoral fin is somewhat oblong, not semi-circular. The skin is thin and the scales, which are large and spinous, easily detached. The dorsal fin commences in front of the upper eye, but the first rays are not elongated or branched. The fin-rays are more numerous than in the brill. Colour a pale brownish yellow without distinct markings. *Most plentiful in Atlantic southward of Ireland and westward of Scotland, in deepish water.*

FLOUNDER.

Shape like a plaice, with no distinctive marks on the brown side which is sometimes nearly black, and the white side is of a more brilliant white than that of the plaice; has a row of spiny scales from head to tail along the middle of the dark side. *Usually caught in Estuaries.*

SYMMETRICAL FLAT FISH.

JOHN DORY.

Has a thin, deep, short body, and a smooth skin, brownish in colour; in the centre is a round black spot, surrounded by a yellow ring, a long first dorsal fin and narrow second dorsal and anal fin. A large mouth, which is curiously constructed so that when opened it seems to protrude and form a tube of some length. Along the base of the dorsal fins on each side is a row of spines, those at the base of the second dorsal being double. *Most abundant on the South and South-west Coasts, especially Devonshire and Cornwall. Spawns from June to August.*

ANGLER FAMILY (Body compressed vertically).

ANGLER.

Very large head, flat, broader than long. Body short and tapering. Very wide mouth, the upper jaw shorter than the lower, with two rows of sharp teeth. Has numerous filamentous rays over the head, one of which is very long and terminates in a dermal flap. Smooth, brown skin, with a network of darker lines, lighter on the belly. *From the Shetlands to the Mediterranean.*

SKATE FAMILY (Body vertically flattened).

SKATE.

The body is in the form of a rhomb (◇) or lozenge, rounded off in the hind parts, from whence a slender tail tapers off to the end. The snout projects, and from thence the sides of the disk slope away to the extremity of the expanded pectoral fins.

The upper part is dusky or grey in colour, variously mottled. The mouth is on the lower surface (which is white); nostrils lobed, and near the angles of the mouth; gill openings, five on each side, converging; ventral fins, broad and flat, enclosing the vent. *Found on all Coasts of the British Isles.*

Several species of skate are sold on our markets. The best known are: The Thornback, with short snout and numerous large spiny tubercles on the back. The Homelyn, with short snout and with small tubercles on the back. The White Skate, with very long, acutely pointed snout. *Found all round the Coast.*

At the conclusion of Mr. Hattersley's demonstration, the PRESIDENT said: I think you will all agree with me that we have listened to a most interesting and highly instructive lecture and demonstration from Mr. Hattersley. For my own part, I do not recall in my long experience of these Congresses that I have listened to a paper so crammed full of knowledge and information. I make bold to say that when that paper is published there will not be one of us that will not treasure it on the library table or the library shelves for reference from time to time.

Apart from the valuable intrinsic information regarding the different fish, one was also struck with the enormous amount of fish which they handle, and I myself was rather wondering what was going to happen when Mr. Hattersley referred to the numbers of fish that were received. Mr. Hattersley in the course of his paper gave us the numbers of various shell fish that passed through Billingsgate or that had been received in this country, and then he went on to say that besides those shell-fish there were mussels, and cockles and winkles and scollops and shrimps, and I thought he was again going to tell us the number of shrimps that had been found. However, I was glad to find he contented himself with giving us the weight in cwts. instead. But when one realises that well over one million tons of fish are handled in this country, I think it is a stupendous amount to consider. One hardly imagined there was anything like that proportion consumed, and presumably most of what is sold is actually eaten. It was very gratifying to know that less than one per cent. of the

fish sent to Billingsgate is condemned as unfit. I think that speaks very well indeed for the handling of the fish at its origin, and the rapidity with which it is transported to Billingsgate and there handled.

Now I hope there will be an interesting discussion on this matter. I do not know how it lends itself to discussion other than by mainly asking questions. There may be some points of difference between you and Mr. Hattersley, although I myself would have very great hesitation in differing from anything he has said. But there may be people with some experience who have points of difference to which they would like to refer, and there may be others who have questions which they would like to ask in their search for knowledge and information. I would ask you, then, to proceed with the discussion as quickly as you can.

DISCUSSION.

Mr. JACKSON YOUNG: During the time I have spent in Sheffield in connection with this Congress, I have been several times asked by my brother professionals: "What has the subject of fish to do with veterinary science?" It has a tremendous lot to do with veterinary science, and it appears to me that we veterinary surgeons will have to be prepared to extend the range of our knowledge. I have listened, and with a tremendous amount of interest, to Mr. Hattersley. Nothing gives me more pleasure than to watch an expert at his work, and to hear an expert describing his work. Mr. Hattersley lives amongst fish, I should say, just as much as I practically live among sheep. Veterinary science does include a knowledge of fish. Every veterinary surgeon during his curriculum has to study biology; he has to study zoology, and botany; he has to study living things. Personally during my course in Edinburgh I had a very good description of fish given to me by my respected lecturer, Dr. Steward MacDonald. In that class we had to dissect cray-fish, and we had accurately to dissect the skin. I believe it was in that class that I developed a keenness for anatomy. I became fascinated in the structure of animals. I have been marooned away on the North-west coast of Scotland for many months on several occasions. I spent a lot of my spare time with the men there,and I have learned very much from them concerning fish. They got together all sorts of curiosities in the fish world for me, and I spent very many pleasurable hours dissecting abnormal specimens. I came across a tremendous lot of hump-backed cod. I also met with many fish showing neoplasms. Such fish seldom reach the market, because they will either be dumped overboard or sent on to fish meal factories.

This subject of fish inspection is all-important, owing to the fact that so many invalids are prescribed fish by their medical attendants; and the responsibilities on the shoulders of a fish inspector are therefore very great. He must see that the fish put on the market is sound, and fit for human consumption. The subject is one that I would like to have heard discussed about twenty-three years ago, when I went up for my Sanitary Institute Examination for Veterinary Inspectors. I would have gone through that examination, if I had only listened to *this* lecture, with flying colours. As a matter of fact, when I came to the fish examiner I felt my knees were a little bit wobbly because I was somewhat weak, and had not the confidence that I had sufficient knowledge to get through the examination. It seems to me that we people who are interested in Public Health—medical officers of health, veterinary surgeons, sanitary inspectors, and meat inspectors—must go more and more in for the study of biology. We must understand life—both animal life and plant life.

Mr. Hattersley mentioned dogfish. A lecture of most fascinating interest could be delivered on dogfish. There is a species of dogfish that gives birth to fish—they are deliverers—and recently in the course of my wide reading I came across a case of Siamese twins recorded in dogfish—a most fascinating study. I think it would have been of great interest to us if Mr. Hattersley could have condensed into a few sentences something about the laws pertaining to fish. Last year I studied the subject of adulteration in order to discuss it at a Congress on that subject, and I became very fascinated in the laws connected with adulteration. I found that away back in the reign of Queen Anne—1713—there was a law which enacted that all salt that had been used for the preservation of fish, after it had been so used, had to be dumped—it had not to be re-used. The reason for that was that an epidemic of fish poisoning had occurred in certain consignments of salted cod. I probed into the history of that and found out that the literature explained that the reason for that fish poisoning epidemic was a species of bacteria. The medical officers and veterinary surgeons present will be most interested in this. The species of bacteria was *Sarcinia literanous*. These sarcinia are of very great interest to those of us who have to investigate stomach complaints. We have a very nasty condition caused by one of the sarcinia—the *Sarcinia rosea*. We sometimes find these sarcinia in milk.

The faking by adulteration of fish is a fascinating subject. All adulteration is fascinating. Last year I discussed the adulteration of foodstuffs, and I pointed out that we need an eleventh Commandment which would say: "Thou shalt not commit adulteration." The adulteration of fish and sophistication of fish would form the subject of quite a lengthy paper. There is no doubt in my mind that we eat fish under different names from what we expect we are getting. I can see readily that a haddock can be skinned, the black line can be removed, it can be dressed and its tail put in its mouth, and it can be passed off as whiting. I can see that take place quite easily. I can also see turbot and brill substituted for other fish. A recent case came under my notice where some fish were sold as smoked fish, and on examination it was found they had been dyed. The fish were submitted to an analyst and the analyst readily dyed wool with the substance that he extracted from the fish. That is very interesting. As I say, adulteration is a fascinating subject. It is also a profitable one to people who carry out the process of adulteration, provided they are not caught. But we as officials should consider it part of our duty to watch very carefully for these methods.

I have probed into this subject of the varnishing and colouring of fish instead of smoking them, and I would like to know if Mr. Hattersley has any information to give us on that point. I found out from scientists that in the smoking of fish, a fish loses fifteen per cent. of its weight, whereas in dyeing it there is no loss of weight.

There is one other item I would rather like to mention: I am very interested in the study of works and in the study of trade customs. I was interested to hear Mr. Hattersley quote statistics drawn up by the Department which I serve in quite another capacity—I have nothing to do with fish officially—but I was rather interested to hear that my Department gave their statistics in hundredweights. I, like the President, quickly divided by twenty and found out the tonnage. I think it is easier to quote tons. Probably the statistical experts of the Ministry prefer hundredweights.

I do hope, Mr. Hattersley, that you will have time to tell us a little about the marketing of fish. As I say, I am very interested in works. I was down at Poole, in Dorset, this year, and spent a long time on the fishing quay, and, to my great astonishment, half the people who were at Poole quay were Scottish. I might as well have been on the Clyde. There were Scotch buyers there and they were offering so much a cran for the sprats that were being sold. I spent a very profitable time in gathering information. It seems to me there is no uniformity in the nomenclature of the receptacles used for containing fish. I think it would be far better if fish were sold by a standard weight.

I thank you, Mr. Hattersley, for your most instructive address, and, as I say, I only wish I had listened to this address twenty-three or twenty-four years ago, before I presented myself for examination.

Mr. HART: I should like to ask Mr. Hattersley if he can explain to us the difference between a ling and a hake.

Mr. DIXON (of Leeds): In the first place, I should like to add my modicum of support to all the complimentary remarks and the thanks expressed by my friend, Mr. Jackson Young. I am sure the meeting is greatly indebted to Mr. Hattersley for a very instructive paper. I was particularly interested in his account of the method that had been introduced, and had been tried with a certain amount of success, for the cleansing of mussels. Without doubt such an operation is necessary and if it could be made practicable for all the areas producing mussels there is no doubt that much valuable food which is at present unused, and if forwarded to markets is wasted because of the danger, could become valuable. I should like to ask Mr. Hattersley if, in the Billingsgate Market, they have noticed a condition which has just recently been brought particularly to my notice. An inspector working in an important fishing port informed me of a condition in the muscular tissues of fish which he said at that port was popularly called "cancer." I was immediately interested in this. The man at that time was a student in meat inspection and he forwarded some specimens—quite a number of them. All the specimens of fish forwarded were catfish, and the lesion consisted in a well-defined nodule embedded in the muscular tissues of the fish. They were grey-coloured and varied in size from that of a pea to that of a walnut, and through a naked-eye inspection tuberculosis was immediately suggested, as it would be to a public health veterinary surgeon. (I think we see tuberculosis everywhere). However, I thought they were worthy of further consideration and I forwarded several of the specimens to biological experts in Leeds, including a cancer research specialist. The report has been that the lesion consists of sarco-sporidia. We are well acquainted with some of the parasites infecting fish, but this sarco-sporidia seems to me to be even more pronounced. I should be glad to know if Mr. Hattersley has encountered it to any great extent in the Billingsgate Market.

Mr. PICKERING: Mr. Hattersley mentioned that if an inspector saw salmon exposed for sale on a stall during the close season he advised the inspector to seize. I should like to know under what Act a sanitary inspector could seize that salmon.

Mr. GOOCH: I should like to know the difference between ling and hake, because one of the difficulties I find is in distinguishing between ling and hake on the stall. My friend Mr. Jackson Young talked about adulteration, but thousands and thousands of coddling are sold as smoked haddock, and the only way to tell the difference is the very definite way that Mr. Hattersley gave to us—by the lateral line which you can always tell when you have your smoked haddock and a cod. There is one question I should like to ask Mr. Hattersley, and that is whether there is very much difference between the female crab—that is to say the edible female crab—and the male crab during the season. He has shown us one containing the whole of the spawn. We very seldom get that; in fact, I do not think they are ever exposed for sale. But frequently out of season you get a crab that is very, very watery, and that is nearly always due to the condition of the female crab just after the time of its spawning. In Mr. Hattersley's remarks he gave us the total weight of the ordinary fish, but the total amount of shellfish he gave us in £. s. d.

Mr. HATTERSLEY: I gave you the weight.

Mr. GOOCH: You gave me the weight, I know, in lbs. Could Mr. Hattersley tell us whether dogfish and catfish are as a rule very marketable?

Mr. MELLOR: Could Mr. Hattersley tell us, in the case of flatfish, if the pectoral fin is going green, would he exclude those fish from the market; and also in the case of skate, if the fins there are going purple or blue whether he would exclude those from the market.

Mr. SAUNDERS: There is a condition of salmon, of which I have completely forgotten the name, in which abscesses are present under the skin. Perhaps Mr. Hattersley would kindly tell me how one would detect that condition during the course of inspection. My attention was drawn recently by a veterinary inspector, to a case alleged to be that, but unfortunately I did not see the salmon until a day or two afterwards, and then all I could notice was just under the skin two empty sacs, looking for all the world like abscess sacs which possibly had been emptied. This salmon was sold by a licensed dealer and it was alleged to have been supplied to him by a licensed salmon fisher. My attention was drawn by a veterinary inspector to the fact that there was no evidence at all of the fish having been hooked. The mucous membrane of the mouth appeared to be absolutely intact, but on the other hand he drew my attention to marks somewhere in the belly of the salmon. His interpretation was that the salmon had been gaffed. Probably some fisherman or some unlicensed friend of his walking along the river bank had simply gaffed it and possibly presented it to the licensed fisherman to put on the market. What I would like to know, for my own information, is how one would recognise the condition to which I have referred. I believe Mr. Hattersley could give it a name, but I have been trying hard, and I cannot think of it.

Mr. SIMCOCKS (of Mexborough): I would like to ask Mr. Hattersley the amount of fish in tons destroyed for diseases, and the amount in tons destroyed for putrefaction. He has given the amount condemned. I would like the amount for diseases and the amount for putrefaction specifically stated.

Mr. HAGUE: I should like to ask Mr. Hattersley if he could inform us of the effect on the consumer of the consumption of unwholesome fish during the spawning season: what would be the effect on the consumer of fish caught in the spawning season.

The PRESIDENT: Are there any other speakers, or have you any more questions you would like to ask? [There was no response.] Before calling on Mr. Hattersley, I would like to refer to the question that was raised by Mr. Dixon in connection with the sarco-sporidiosis of fish and its resemblance to cancer. That reminds me of the theories that were in existence some years ago that cancers, or some forms of cancer, were produced by some of the protozoan parasites of which the sarco-sporidia form a part, and it is a very interesting commentary on that that the lesions described in that case so nearly resembled to the naked eye the lesions of some form of cancer. With regard to tuberculosis, to which reference was also made, it may not be news to most of you that tuberculosis in fish does exist, and that efforts are being made at the present time to produce immunity in mammals by means of a vaccine prepared from the tubercle bacillus of fish. Whether that will have any sound, effective result still remains to be seen. One of the conditions sometimes met with in the flesh of fish—it will not be the one referred to by a speaker a moment or two ago, and which Mr. Hattersley will answer—which produces cavities in the flesh of the fish, is a cystic stage of one of the tape-worms sometimes met with in man, in dogs and cats, and in fish; but the cystic stage of it is often met with in other fish. It is the cystic stage of bothriocephalus. But, however, these points are rather outside the paper to-day, which is not dealing so much with the diseases of fish, and I think by the interest which has been aroused to-day that on some future occasion we might with advantage have a paper in this Section on the diseased conditions of fish and their detection on inspection. I will now ask Mr. Hatterley to reply to the questions that have been put.

Mr. HATTERSLEY: With regard to Mr. Jackson Young on laws regulating fish. I believe in the old days there were laws regulating fish, both for salting, curing, and drying. and I think there was a law that no fish should be kept above two days. Of course that has gone. In those days there was no ice, and now we have to use our own judgment as to whether fish is bad or good, independent of any old laws.

I quite agree that the skinning of haddocks can easily be done, and haddocks can be sold for whiting; in fact, it is done many a time; but if you get accustomed to seeing a fish, and if you see a haddock skinned and see a whiting skinned, on the flesh of the whiting you will find that it will be silvery—all along where the skin is left upon the centre of the flesh it will be perfectly silvery, whereas the

haddock will just merely be a clean white skin. You get a silvery sheen after the skin has been taken away from the whiting.

With regard to dyed fish: the dyeing of fish was referred to—particularly to fish fillets. Fish fillets are made from cod, ling, and haddock principally. There were formerly aniline dyes used: there is no doubt about that, because I know there was quite a rumpus in London about it. But any inspector can find out for himself whether they are aniline dyes or vegetable colour by taking two or three drops of sulphuric acid, and if you get a reaction you are getting the vegetable colouring; if you do not get any reaction at all you are getting an aniline dye. It is quite easy to tell by using that method. But I think the dyeing of fish has all been stopped—at least I hope it has. We do not use any dyes in London now.

As to the packages: a cran is the recognised measure for herrings.

Concerning the difference between hake and ling: the ling has very, very fine scales, and there is a difference in colour and a difference in thickness. The hake is not quite so long as the ling. The hake head is flat and it has a large mouth and sharp teeth. The ling has a barbel on the chin: you need not go beyond that. The fins on the ling are tinged with grey.

With regard to Major Dixon and his point about catfish, I think London handles more catfish than any other market in England, but it is always sold in packages—never weighed out. It is sold so much a box; and during the whole of my experience in London I have not seen a catfish diseased. If I do I shall certainly send it and have it examined to find what disease it is. I have had codfish with tumour, I will admit. I got a codfish a few months back, with a tumour which weighed 4lb. out of a 14lb. cod. Naturally the fish was only like a whiplash—there was almost as much tumour as there was fish.

Concerning the seizure of salmon in the close season, I think every Public Health Authority ought to have a copy of the Salmon and Fresh Water Fisheries Act of 1923, so that the inspector can go to it, and consult it at any time he wishes. It is laid down there quite plainly that it is illegal to buy, etc., any salmon or part of any salmon between the 31st of August and the 1st day of February unless such salmon has been legally taken . . . We made arrangements with the Canadian and Newfoundland Governments that salmon coming to England must be accompanied by a certificate of origin. Where any fresh salmon is exposed for sale you have a right to ask the person concerned where he got his fish, and to make him prove it was legally taken, and if he cannot you have a perfect right to hold it up under the Salmon and Fresh Water Fisheries Act of 1923.

With regard to crabs, I was asked which crab was the best—the male or the female. When crabs are in perfect condition, if you like the inside of a crab, get the female; if you like the claws of a crab, get the male crab. If you are buying a crab for your own consumption and you want to know whether it is wet inside or dry, all you have to do is to put your finger and thumb between the claws and see if you can move them. If you cannot move the claws you get a good inside; if the claws are slack, you get a wet inside: and in all probability the reason you get crabs in such a wet condition is that they have only just recovered from casting their shell, because they lie under rocks for some time until the new shell begins to form. Consequently they are robbed of a great part of their natural food and are losing weight all the time.

The sale of cat-and dogfish is very large in London, but I do not think many people in the North know very much about it. It is used largely by suppliers in the South.

Re the condemnation of plaice, should it be going green on the pectoral fin: I do not understand that. If plaice is going green it will be in the gut cavity, where the gut has been removed. If it is going green, however, examine your fish: take your knife, cut it down as if you were filleting it, and just look at the bone. If the bone is all right, and it is only just touched a bit in the cavity, you can cut that away probably. But always examine flat fish by the gut cavity: that is the best test.

With regard to skate, when they are going off, they will give a reddish or blue colour round the wings, and you will also get a very strong smell of ammonia. If they are going slightly discoloured round the edge of the wing and you do not get the ammonia smell, the fish is not bad enough to condemn. You can trim that off with a knife. It is only on the very thin flat end you get it.

Concerning salmon, the disease of the name of which he could not think: I think you were referring to furunculosis. That is a disease which attacks salmon, particularly in one or two Irish rivers. You can detect that by placing your fingers on the body of the fish, and if you feel small nodules, that is furunculosis. Eventually the diseased nodules break out like boils and become repulsive in appearance.

Respecting the spawning season of fish: I do not quite know what you mean by that. It is only natural, as I said in my paper, that during the spawning season—there is no closed season for sea fish—but during the spawning season you do not get the same nature in their flesh as you do after the fish have recovered from the spawning season. The flesh is somewhat watery, and with regard to the spawning season of the other fish, it is the closed time. You should not use the other fish during spawning season—either fresh-water fish, salmon, or trout. That is for the protection of the fish and not of the consumer.

Votes of Thanks.

The President: I have now a very pleasing duty to perform, and it is to ask you to accord to the readers of papers and the openers of discussions—that is particularly to Mr. Dolan, who came from Dublin to give his paper, and Mr. Hattersley, who has given us his very excellent paper and demonstration to-day—our very hearty vote of thanks for the excellent papers they have given us, and for the instruction we have received from them, and also to the officials of the abattoir who so very kindly gave us their time yesterday and conducted us round the abattoir. I ask you to accord to them your deep appreciation of all they have done for us to make our Section a success this year.

[The motion was carried with acclamation].

Mr. Hattersley: I thank you for the vote of thanks you have just passed, and I only hope that you may get benefit from spending your hours here this morning—and what is your reward I am sure will be mine.

Alderman Phené Neal: We cannot possibly break up this annual Conference without passing a vote of thanks to the Chairman. Professor Wooldridge is an old friend of mine. We have met at many of these Conferences, and we sometimes have the good fortune to meet in London, and I am always impressed by the large amount of knowledge which is contained in that head of his, which knowledge he always places at our disposal.

Now, the Veterinary Section has come to a close for 1929. There are certain points which occur to me, respecting which I wonder whether we are altogether conducting our business in the very best way possible. This Section has undoubtedly increased in importance during the last few years. A great deal of interest has been taken, and, I think, a great deal of good has been done. I suggested to the Council last year that, as we had such overflow meetings at Plymouth, the time had come to consider whether we should not have a greater opportunity of discussing matters in relation to this particular Section. However, the Council in its wisdom thought we had quite enough time, or as much time at all events as they could spare, and the result is we have gone back or retained our old situation. Now there is nothing

so important as the consideration of our food supply, and we here in this Section have given a very great deal of time and consideration to the food supply. We have discussed milk from end to end—if there ever was an end to milk—and we have decided that for the time being: even the Chairman yesterday talked about "Grade A milk" and so on. It has so impregnated him and many of us that we do not seem able to get away from it. But here is now quite a new departure. We are considering the question of food supplies from the sea, and you have heard this morning the enormous amount of foodstuffs which we obtain from the sea. It seems to me that our inspectors have got, even now, still something to learn. I wish we had had a very much larger meeting, but unfortunately the Food Section meetings are taking place elsewhere. I think, however, it might be wise to consider whether in future conferences we might not go a little further with this fish question. It is quite new—and I should be rather glad if the Council would consider whether we should not go a little further and a little more deeply into this question of fish supply. I have touched on a point this morning which I think is being developed, namely, the immediate dipping of the fish into brine at a temperature of about 10° F. That is more or less in its infancy, and if that could be successful and were successful, the food supply, more particularly to the Midlands of England, would, I think, be a good deal better than it is to-day. I congratulate this meeting on having been presided over by Professor Wooldridge. He has done a great deal for us all, and I ask you to accord to him a very hearty vote of thanks.

Mr. PARKER (Newcastle-on-Tyne): I should like to take this opportunity of seconding the vote of thanks that has been so ably proposed by Alderman Phené Neal. It is one thing to have material brought before us at this Section of the Conference from time to time; it is another thing to have had the meetings well filled: but finally it is equally important to have enthusiasm at our meetings. I should just like in conclusion to support all that has been so ably put by Alderman Phené Neal, and to second the vote of thanks.

Alderman PHENÉ NEAL: Ladies and Gentlemen, is it your pleasure that we accord a unanimous vote of thanks to our President?

[The motion was unanimously carried with acclamation].

The PRESIDENT: Alderman Neal, Mr. Parker, Ladies and Gentlemen, it only remains for me to thank you for the appreciation you have accorded to what little efforts I have been able to bring to bear on the conduct of the meetings. I quite realise that if it had not been for the assistance of our Recording Secretary and our two Local Secretaries—Mr. Tweed and Mr. Fletcher—it would have been quite impossible for me to have conducted the meetings in the way in which I have done. I thank you on their behalf as well as my own for the kind way in which you have supported us and accorded us your thanks.

[The proceedings then terminated.]

Twenty-seven sheep were killed by a motor lorry carrying six tons of stone at Hickleton, near Doncaster, recently. The sheep, part of a flock owned by Mr. J. H. Turner, of Hickleton, were being driven from a field on to the road.

The Veterinary Record.

21st September, 1929.

CONCERNING FISH.

Subjects for discussion at the annual congress of the Royal Sanitary Institute are chosen from their important nature, application, and with a view to stimulating an interchange of ideas It was certainly an innovation, at the Sheffield Congress held in July, to have a discussion on fish at the Section of Veterinary Hygiene. The views expressed by the veterinary surgeons who discussed the subject were sound and served to show the mixed audience and readers of the press reports that the veterinary profession is now progressing in all branches of Public Health work. It was correctly pointed out that all veterinary students have to study fish during their curriculum and that in some of the Colleges dissections of fish take place in the practical class of Zoology.

Truly, the Public Health Officer of to-day has of necessity to be a man of parts. He is required to possess a thorough and complete understanding of the many regulations, often obscure and involved, in innumerable Acts and Orders. He must keep abreast of the times in scientific knowledge and its applications and, in addition, a knowledge of trade customs is necessary.

Fish inspection falls to the lot of many veterinary officers and its importance cannot be disputed. Each year sees more and more fish being consumed by all classes and it was, probably, owing to this fact that the Council of the Royal Sanitary Institute decided to have a discussion on "Fish Identification and Inspection" before a Section attended by many who have a good practical knowledge of biology and pathology. By his training, the veterinary surgeon is qualified to diagnose the morbid conditions met with in fish. Several of our text books deal very fully with the diseases of fish and a veterinary student has not been long at college before he learns of parasitic conditions that are common to fish and man.

Many of the alkaloids connected with the decomposition of fish are extremely toxic and are only understood by those who have studied organic chemistry. It is, therefore, important that the inspection of fish should be carried out by properly-trained officials, possessed of a keen sense of touch and smell and with developed powers of observation. The tricks of the trade connected with fish were rightly exposed at the Congress.

The subject of education enters into the discussion on fish. It has been said that "education is nothing more than the giving or withholding of opportunity." Given the opportunity, it will be found that Veterinary Inspectors attached to Health Departments are fully capable of expressing sound opinions regarding the fitness of fish for human consumption. Many of our colleagues are called on to perform such duties. On the occasion of a recent visit to the office of a Veterinary inspector we saw a

large coloured diagram depicting the various species of fish.

Veterinary Officers are agents for the preservation of life. They have moral and civic responsibilities of which too often sight is lost and it is regrettable that their knowledge and skill are not more utilised. Their activities are not limited to the well-being and efficiency of the present population, but extend to the vigour and potentialities of the succeeding generation of workers.

The education of such officials is all important. It is advisable that during the course in zoology the student should receive instruction concerning edible fish and be shown typical fresh specimens. Classification is based on morphology. That being so, the student could easily master, in what have been termed "the receptive days," the details concerning the various species. During the course on hygiene, the principles of cold storage and refrigeration should be clearly demonstrated. Much research work has been done concerning the effects of cold storage on fish. Many difficulties exist in the storing of fish, according as they are long in the nets or in the boats before being landed. They should, in any case, if for chilling, be at once cleaned and washed as soon as landed from vessels, and placed in the ice-houses covered with broken ice, which, however, as it melts, tends to remove the mucilaginous envelope, and lessens the keeping qualities by making the flesh flabby and soft.

Many of our readers have had much experience of the inspection of fish and others with the abnormalities commonly found. It was clearly evident from the discussion at Sheffield that the consumer does not always obtain what is demanded. Methods of sophistication should be ruthlessly exposed and suitable penalties inflicted upon the offenders.

The Quarantine Station.

"The institution of the Quarantine Station on the Thames has already been more than justified," says the Agricultural Correspondent of *The Times*, in a recent issue. "The project involved considerable outlay and sustained responsibility on the part of the Ministry of Agriculture, the Royal Agricultural Society, and the Empire Marketing Board, and it is gratifying to know that important results have accrued since the station was opened seventeen months ago. The success of the enterprise, however, as often happens in like circumstances, has emphasised the inadequacy of the existing accommodation, especially at seasons when the export trade in livestock is, or should be, in full swing. It can never be easy to adjust quarantine provisions to a fluctuating traffic, but there is a feeling among breeders of pedigree animals that the need for and the efficiency of, the station have been demonstrated sufficiently to warrant such extension as would provide for an increased number of animals to be accommodated in the busy months. An owner of pedigree cattle informs me that he has been obliged to cancel the sale of a dozen valuable animals because provision could not be made for them at the station to enable them to be shipped at a suitable time to South Africa. The question is important and deserves, and no doubt will receive, the respectful attention of the authorities concerned. All of them appreciate the significance of encouraging and facilitating trade in pedigree livestock with the oversea parts of the Empire, and at the same time they will recognise the claims of home breeders to all the help that can be given them to find an outlet for their surplus stock."

CLINICAL REPORTS.

Traumatic Rupture of the Diaphragm in the Dog.

By G. B. Brook, B.Sc., M.R.C.V.S., and
J. W. H. Holmes, M.R.C.V.S., D.V.S.M.,
Clinical Assistants, Royal Veterinary College, London.

In connection with a recent case of rupture of the diaphragm in a dog brought to the College Clinic, the writers had occasion to collect the literature on this subject. It is proposed to describe the case referred to and, by analysis of the clinical records available, to discuss certain points which are of importance in diagnosis and possible treatment.

Subject. Sealyham, aged one year.

History. Run over by a motor car fifteen minutes previously.

Examination. Pulse good and visible membranes satisfactory. Respirations 34 per minute. The respiratory movements of the abdominal wall were normal in excursion. Those of the thorax were markedly exaggerated; the walls of the chest rose and fell vigorously, the inspiratory excursion being most evident over the last five or six ribs of either side. Auscultation revealed a definite area of dulness on the left side over the seventh to the tenth intercostal spaces. It extended from the costal arch below, to the level of the middle third of the relevant ribs above. The corresponding area on the right side was normal. Percussion of the area on the left side was indefinite.

The animal was admitted for observation. During the succeeding twenty-four hours the condition of the patient remained unchanged, and at the end of this period she was offered a little solid food which was taken voluntarily. Within thirty minutes a marked general distension of the abdomen supervened and signs of collapse followed; the visible membranes were extremely pale and the pulse imperceptible. The abdomen was tapped with a trocar and canula, allowing foul-smelling gas to escape under pressure. At this stage the animal expired. *Post-mortem* revealed the following (see Fig.):—

A. *Thorax.* About 20 c.c. of blood-stained fluid were present in the left pleural cavity. The left lateral lobe of the liver had passed through a rent in the diaphragm and lay in the left side of the thorax alongside the heart. The *saccus cæcus* of the dilated stomach protruded into the thorax and insinuated itself between the herniated liver mass and the chest wall. The left lung had collapsed; the mediastinum was intact. The displaced lobe of the liver lay against and mechanically occluded the posterior œsophagus.

B. *Abdomen.* That part of the stomach resting in the abdominal cavity was tensely dilated (see Fig.). No intra-abdominal hæmorrhage had occurred.

C. *The Diaphragm.* The hernial ring extended horizontally from the region of the middle of the eleventh rib to the middle line. Its edges were irregular and shewed the usual characters of an *ante-mortem* injury. The wound was some two inches in length with a maximum width of half an inch, and did not follow the disposition of the muscle fibres.

1. Liver (Intra-Thoracic portion).
1¹. Liver (Intra-Abdominal portion).
2. Heart displaced to right.
3. Diaphragm in horizontal section.
4. Spleen.
5. Stomach (distended Intra-Abdominal portion).
6 and 6¹. Lungs.
7. Stomach (Intra-Thoracic portion).

XUM

Discussion.

Acute fatal distension of the stomach following traumatic rupture of the diaphragm has been reported only once previously, so far as the writers are aware, and in that case ten days after the rupture(10). The possibility of such a sequel suggests that while suspected cases are under observation feeding *per os* should be avoided. Rectal or intravenous injection of fluids should be practised.

From the data of the several reported cases of rupture of the diaphragm in the dog (1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11) an attempt will be made to answer the following questions :

1. Does the hernial ring shew any regularity of position or disposition ?
2. Is the hæmorrhage following an uncomplicated diaphragmatic hernia such as to demand immediate attention ?
3. What viscera are most commonly involved ?

1. *The Hernial Ring.* Nine cases (75%) shewed rupture on the left side of the diaphragm, one (8.3%) in the mid-line, and two (16.6%) on the right side. Stainton(1) in his first two cases does not state specifically where the rupture lay ; but since in the first the stomach, spleen and part of the small intestine were found in the left side of the thorax and in the second a part of the stomach protruded through the diaphragm, it is probable that both these represented left-sided herniæ. Again Chambers(8) does not mention the exact site, but refers to an X-ray photograph demonstrating bowel in the left chest. It is therefore assumed that this was a left-sided hernia. Wright(10) omits to define the site of the rupture, but refers to a displacement of the heart to the left and so has probably described a left-sided rupture. We have made several experiments upon the fresh carcases of dogs to determine the reason for the frequent occurrence of rupture on the left side. A window was cut in the floor of the abdomen, just behind the costal arch. A piece of flexible celluloid was sutured into the abdominal wall to render it again intact, and by this means movements of the viscera under the influence of external pressure could be watched. The chest was opened and the heart and lungs were removed to expose the pleural side of the intact diaphragm. Under these conditions, when pressure was applied to the wall of the abdomen the diaphragmatic dome protruded into the chest cavity ; this was followed by a general forward movement of the mobile abdominal viscera, particularly the *saccus cæcus* of the stomach. The very mobile left lateral lobe of the liver shared in the movement, but the right mass of the liver (central and right lateral lobes) was restrained by the reno-hepatic ligament, and the anchorage afforded by the vena-cava and the portal vein. The liver was thus compelled to assume a slightly oblique position which tended to deflect the movements of the intestinal mass and of the *saccus cæcus* towards the left. Forces were thus resolved chiefly in that direction to converge directly upon the left side of the diaphragm. The facts that the main mass of the liver lies slightly to the right side of the body, and that it is asymetrically anchored, so far as forward movement is concerned, probably constitute the reasons for the predominance of left-sided diaphragmatic herniæ.

2. *Hæmorrhage.* It is important to decide if rupture of the diaphragm can cause fatal hæmorrhage. On this rests the decision whether immediate operation should be attempted to counter the bleeding or the case be left for a more complete examination, *e.g.*, X-ray. An analysis of the reported cases suggests that serious hæmorrhage from the actual rupture is rare. In five of the several cases under consideration, the presence or absence of blood in the abdominal or thoracic cavities is definitely mentioned, and taking into account the reported *post-mortem* findings in each of these, it seems safe to conclude that serious and fatal bleeding arose in none of these instances from the simple rupture of the diaphragm. The symptoms, supplemented by tapping of the abdomen and of both sides of the chest, will readily establish the presence of serious internal hæmorrhage, and so determine those cases demanding immediate operation. In this connection it is to be noted that in practically all instances serous fluid more or less blood-stained ultimately collects in one or all of the great body cavities.

3. *Viscera involved.* The relative frequency with which the viscera are implicated is shewn in the appended analysis.

Liver (generally in part) and stomach are equally involved in 50 per cent. of all herniæ. Small intestine and spleen are implicated in 41 per cent. and 16 per cent. respectively. A hernia including the pancreas is not on record, doubtless due to the special anchorage of this organ.

As a basis for comparison, the figures in four reported cases (1, 3, 4, 6) of congenital herniæ are also included, viz. : liver 100 per cent. ; stomach 50 per cent ; small intestine, spleen and pancreas each 25 per cent.

It is readily apparent that in most cases an operative reduction of the hernia would involve a manipulation of the stomach or liver. Many writers refer to the congested condition of the latter organ after protrusion, complicated occasionally by regional adhesions.

Remarks.

A case of diaphragmatic rupture, unaccompanied by that most serious complication internal hæmorrhage, may safely be subjected to the more detailed examination necessary to arrive at a precise diagnosis. Apart from a concurrent hæmorrhage the more immediate danger in certain cases appears to be acute stomachic distension ; as in all other cases of internal injury, morphia as a narcotic is strictly contra-indicated because of the dangers of the resultant vomiting. The history and symptoms, with percussion, auscultation, tapping of the chest and abdomen and the employment of X-ray, with or without bismuth meals, will all contribute to elucidate the suspected case. Laparotomy in established herniæ should never be performed in the absence of one of the anæsthetising appliances designed to prevent collapse of the lungs (see Ref. 8) on the introduction of air into the pleural cavity.

Acknowledgment. We wish to thank Professor Wooldridge, in whose clinic the recorded case occurred, for permission to publish this article.

Bibliography.

1. Stainton, H., *Vet. Journ.*, lxxii, 3, 95-96.
2. McKinna, W. R., *Vet. Journ.*, lxxvii 1, 18.
3. Hardenbergh, J. G., *Journ. American Vet. Med. Assoc.*, N.S., xxiii, 239-241.

4. Stewart, W. L., *Vet. Rec.*, ix, 10, 198.
5. Steward, J., *Vet. Journ.*, lxxxiv, 4, 199-200.
6. Lutz (quoted Hobday) *Berlin Tierärtz. Wchnscht*; June, 1922.
7. Turla, F. F. & Yutuc, L. M., *Vet. Med.*, xxi, 396-398.
8. Chambers, F., *Vet. Rec.*, iv., 77.
9. Chambers, F., *Vet. Journ.*, lxxx, 7, 284.
10. Wright, W. N., *Vet. Journ.*, lxxix, 6, 210-211.
11. Steinberg, *Berlin Tierärtz. Wchnscht*; Abs.: *Vet. Rec.*: xxiv., 690-691.

Some Clinical Cases.*

By H. Llewelyn Jones, M.R.C.V.S.,
Denbigh.

Suspected Tuberculosis in a Mare.

This was a three-year-old hunter mare, broken to saddle and harness, which had been doing light work for six months.

The mare was foaled on the farm premises and reared by the dam. On the 7th February last, the owner consulted me with regard to her, and from his description of the case I gathered that she might be suffering from laminitis in both fore feet. I prescribed and advised accordingly. On the 12th I was requested to see her, as she was no better and could hardly move.

She was in a loose box, and at first sight she presented a typical picture of a laminitis case, but upon closer examination I discovered some symptoms which one does not usually associate with that disease. There was a peculiar stiffness of the neck, and on lifting the head she showed a tendency to fall backwards. Occasionally she would assume a fairly normal standing position, but she usually stood with front feet well forward, and the hind ones well under her.

Her temperature was 103° F., her pulse slightly accelerated, but it was not what one would expect in acute laminitis, and yet when made to back she did so like a horse suffering from that complaint.

I labelled the case N.Y.D., and I injected adrenalin over the course of the four plantar nerves, administered a physic ball, and prescribed sodium salicylate and pot. nit. I ordered the shoes to be removed and the feet to be cut down and trimmed, and advised the use of cold swabs and soft bedding.

As the case was many miles distant from the surgery, I did not pay another visit for some days, but I was in telephonic communication with the owner daily, and there was nothing much to report: if anything, the case was gradually becoming worse.

I visited the mare again on the 18th, when I definitely decided that it was not a case of laminitis, but some injury or disease of the fourth and fifth cervical vertebræ. By now the mare could not lower her head to reach the bottom of an ordinary manger, and when the head was forcibly raised she fell backwards, showing evident signs of pain. The neck was as stiff as a plank, and bending it to the right or left caused pain. I decided to apply the tuberculin test, using Prof. Buxton's concentrated bovine intradermal tuberculin, one minim of which I applied there and then in the usual routine manner. On the 20th there was a slight increase in the thickness of the skin, and I injected a second time—2 minims. Twenty-four hours later, when I again visited her, there was what I called a decided reaction. The skin measurements were 5 mm., 8 mm., and 12 mm.—decidedly painful and œdematous, and irregular in outline. It was not a marked reaction like some of the bovine intradermal reactions, but it resembled the Johnin reaction.

I now came to the conclusion that it was a case of tuberculous ostitis of the fourth and fifth cervical vertebræ. At a later date, when atrophy of the local muscles had set in, these vertebræ looked particularly prominent, especially on the near sides.

Soon after this all symptoms became aggravated and pronounced. If the mare lay down she could not get up without help, and she was always found lying down flat on her side, but once she was helped to the breast position she managed to get up. She now developed enormous bed sores.

A suggestion on my part to destroy the animal was not acted upon, though the owner was not expecting recovery; but, having kept her for such a long time, and she being a very promising mare, he decided to "wait and see."

I might say that from the very commencement the mare was fed and watered from a platform, and the appetite remained quite good. This limitation of movement, together with iodide of potassium internally and iodine ointment externally, constituted the treatment. As time went on, the mare started improving until at last she was turned out about the middle of June last, though this was contrary to my wish. She is now in good condition and is able to graze, but there is still some amount of inability to get down to feed in a normal fashion. The owner is prepared to leave her alone for another six months if necessary. It will be interesting to keep her under observation, which will not be difficult as the owner will never part with her. Some day she will be subjected to the tuberculin test again.

Undetermined Cases in Cows.

During the second week in June last I had four cases similar to one another in four different farms. I had none previous to that, and have had none since.

The subjects were all milking cows, and each one had one fore limb considerably swollen from the coronet to near the elbow joint, where there was a distinct line or ring of demarcation, the lesions resembling lymphangitis.

Lameness was not marked—it was a mechanical stiffness. The swelling was very tender to the touch, and a watery fluid exuded in beads through the skin. These beads became dried and encrusted. In some of the cases the swelling extended up to the axilla and sternum.

Treatment consisted of a large dose of mag. sulph. and astringent lotions. They were kept in a loose box, and all recovered in about seven days. Was it eczema, lymphangitis, cellulitis, or some other "itis"? They were apparently simple cases.

Johne's Disease.

The four subjects were young—ranging from nine to eighteen months old, and therefore very liable to gastro-intestinal disorders, especially parasitic gastritis, but the four of them reacted to the Johnin test, so that it is only

* Presented to the North Wales Division, N.V.M.A., at Denbigh, on 26th July, 1929.

reasonable to assume that they were suffering from Johne's disease. Some of them had been sadly neglected and were extremely emaciated, especially two which were bulls. I first saw the animals last October and they presented the symptoms and history which one usually associates with Johne's disease. They were all subjected to the intradermal tuberculin and Johnin tests simultaneously. They all passed the former and reacted to the latter. They were isolated, watered and fed according to my instructions, and the treatment consisted of two doses of $CuSO_4$ at intervals of three full days, with twenty-four hours' starvation prior to each dose. The cupri sulph. is finely powdered and dissolved in water, and two drachms of mustard are mixed with water and added to each dose. This makes a nice yellowish-green mixture. Each dose is given in a quart of water.

I do not for a moment wish to imply that I am giving you here a certain cure for the disease, but I am just relating my experience.

In some cases the diarrhœa is less pronounced even after two doses; in others it is continuous for a longer period. Once the animals cease to purge I discontinue the medicine and give a dose whenever the diarrhœa shows signs of reappearing. In some cases—very advanced ones—the treatment does not seem to be of much avail, but my experience as well as that of some of the owners who have been troubled with this disease for years, is that, given early, this treatment is more successful than any other form of treatment, and I have tried a mixture of ferri sulph. and sulphuric acid, intravenous injections of formalin, dimol, a mixture of naphtholein, ol. tereb. and ol. olivæ given in milk daily.

One patient—a white bullock—was recently sold to a butcher for £23, and last October the owner would have taken £3 for it; in fact, it was not worth that.

I ask you not to pin your faith to cupri sulph., but it is worth a trial, and, incidentally, it is about the best treatment for parasitic gastro-enteritis in young bovines, given in the same doses and in a similar manner.

Tuberculosis of the Testicle in a "Burdizzoed" Bull.

The subject was a nine-months-old bull, out of seven castrated last October with the "Burdizzo" instrument. Last May I was told that one testicle had not disappeared, and that it was getting much bigger.

When I called to see the animal I found that the testicle was abnormal in size, but of normal consistency. As I was not prepared for an operation I had to leave it for a few days and then I removed it under general anæsthesia. There were adhesions extending from the point of the scrotum almost right up to the inguinal canal.

After removal I found there were abscesses in the testicle. I sent it away to be examined, and it proved to be tuberculous. The case afterwards did well—the local swelling gradually disappeared, and the animal is apparently thriving. It is curious that tuberculosis should become active after the operation, for at that time both testicles were normal.

"A Case for Diagnosis."

This case I have already reported in the *Veterinary Record*, July 20th. I would like to hear your opinions as to the cause and nature of that condition. I will just read it as reported. [See page 610 of that issue.—Ed.].

Atlanto-axial Subluxation.

One morning I had a 'phone message to see a cow down after calving. She had been out day and night, and had calved forty-eight hours previously.

She had been brought in prior to my arrival with difficulty owing to her very unsteady gait. I found her lying down in the shippon, with a very marked S-shaped curve in the neck, her nose resting on the floor.

I made her get up, and in doing so she fell forward very clumsily, and then moaned as if she was disgusted at her inability to rise. Her temperature was normal and breathing was accelerated.

From the history and description I have given to you, what would you say the case was?

[Here a number of members ventured an opinion.]

I think the majority would come to the conclusion that it was a case of milk fever, and so did I.

The udder was inflated, a heart stimulant was given by hypodermic injection, the urine withdrawn, the rectum emptied, and the cow made generally comfortable.

I called again about 6 p.m. and was surprised to find the animal in very much the same condition. No improvement nine hours after inflation made me think, and I had to "sit up and take notice." After further examination I discovered that the animal was suffering from a subluxation of the atlanto-axial joint. The case happened two months ago, and the cow still has her S-shaped neck. That is one against me, but the owner would hardly believe me when I changed my diagnosis in the evening. We have had a laugh over it since, however.

Curious Case in a Heifer.

Whilst attending to a case at a certain farm I was asked by the owner to have a look at a heifer.

As she walked into the yard I noticed she was in poor condition, and the neck had a peculiar shape, like a ewe-necked horse—with a large long swelling extending for some length along the front of the trachea. Upon examination I found it was very hard, and at the proximal end it seemed to have a cross piece with knobs on each end. The jugular veins between it and the head were enormously dilated, and on one side of the swelling previously referred to was a long irregular old scar of some age.

The heifer could drink and eat and chew her cud, but her appetite was not very good. I told the owner I could not do much to it, and I said that it would kill her eventually. A few days afterwards I was informed that she had partially lost the use of her hind quarters.

When I saw her she could hardly get up, and was very unsteady and her legs "giving in," with the result that she went down slowly and gently.

She rapidly became worse, and I was praying all along that she would die in time for to-day. She obliged me last night. The owner would not have her slaughtered previously, as there is likely to be a dispute about the purchase of the animal.

. . . . . .

That, gentlemen, completes my written contribution.

(*Continued at foot of first column next page.*)

Scottish Branch and West of Scotland Division, N.V.M.A. Meetings.

Scheme for the Eradication of Bovine Tuberculosis.

Reports are given below of meetings of the Scottish Branch, and also of the West of Scotland Division, N.V.M.A., at which the principal business was consideration of the following scheme for the Eradication of Bovine Tuberculosis, which is proposed by the West of Scotland Division, and which the Scottish Branch has agreed to ask the various Divisions constituting the Branch to consider and report upon :—

SCHEME FOR THE ERADICATION OF BOVINE TUBERCULOSIS.

(1) We affirm our belief in the reliability of the tuberculin test when applied and interpreted by veterinary surgeons. It is on the use of this test that the whole scheme is based.

(2) For the sake of uniformity it is essential that the Ministry of Agriculture and Fisheries (M. of A. & F.) issue from time to time explicit and detailed instructions as to technique and interpretation of the tuberculin test.

(3) It is essential that tuberculin used under the Scheme be supplied, or at least certified as to quality by, the M. of A. & F.

(4) The possession of tuberculin by laymen should be prohibited.

(5) The preliminary work of eradication should be done by the local practitioner. The crucial tests, following on which a herd is to be certified tuberculosis-free, should be done by a representative of the M. of A. & F. The work of maintaining the herd free should be returned to the practitioner under official supervision.

(6) The preparation of areas and the supervision and co-ordination of work within them will fall into the hands of the local practitioners and of the County Veterinary Officer.

THE TUBERCULOSIS ORDER.

This should be maintained and its scope possibly extended.

THE SCHEME.

(1) *Object.* To eradicate tuberculosis from all the cattle in Britain, both beef and dairy stock. It is a matter for consideration whether to attain this object it is necessary to include pigs and poultry. While the Scheme will improve the quality of both the meat and the milk supply, it is essentially a fight against a single disease.

(*Continued from previous page.*)

The head and neck, with some other specimens, are now in my yard, and I invite those interested to come down for a few minutes to see them.

I have some other pathological specimens to show you, also two or three dogs, and one microscopical specimen, a scraping from a sheep suspected of being infected with sheep scab. I wonder if any of you have met with this parasite. It causes considerable local irritation, and sheep behave exactly as they do in scab. The disease does not spread easily from sheep to sheep, neither is it notifiable.

(2) *Control.* Being a fight against a single disease of stock, its control must rest with the M. of A. & F.

(3) *Outline.* The attack is not to be general, but particular, *i.e.*, directed against the disease in specified herds and in definite circumscribed areas. An annual appropriation is asked for, which may be large or small, and no work is to be undertaken which cannot be paid for out of the sum provided.

The Scheme is divided into three parts, which may be called—A, Accredited Herds ; B, Areas by Application ; C, Compulsory Areas. Subject to provisions discussed under the separate parts, the money should be divided fairly equally amongst them, and the three parts are eventually to be worked concurrently.

(4) *Features common to all three parts.* The herd or area is to be cleared of tuberculosis by the application of the tuberculin test, and the removal of reactors under such conditions and with such disinfection of premises as may be prescribed by the M. of A. & F. All the cost of testing and disinfection is to be borne by the M. of A. & F. When circumstances permit, reactors are to be valued and slaughtered, equitable compensation being paid to the owner. Reactors for which the owner refuses to accept £50 must be indelibly marked and disposed of outside the herd or area, as the case may be. (It is to be understood that an animal bearing the prescribed mark shall not again be presented for testing.) In cases where reactors prove numerous, and the owner finds himself unable to replace the condemned cattle, these also must be indelibly marked, and may then be retained under the " Bang " system. Subsequent slaughter with compensation may be at the request of the owner or at the order of the M. of A. & F. Where the necessary separate buildings are not available the M. of A. & F. will provide temporary structures. These could well be sectional and removable, occupied at a moderate rental and remaining the property of the M. of A. & F., for subsequent use elsewhere, the occupier to have the option to purchase. Up to this point the veterinary work is to be done by the practitioner selected by the owner, under the orders and at the expense of the M. of A. & F. The M. of A. & F. may reject a practitioner for incompetence, negligence, etc. When the practitioner reports that the regulations laid down by the M. of A. & F. have been complied with, and that tuberculosis is eradicated from a herd, the M. of A. & F. conducts by their representative a crucial or determining test. If this is negative, the responsibility of maintaining the herd tuberculosis-free is again given to the practitioner on prescribed conditions and under supervision. Conditions are also to be laid down by the M. of A. & F. as to the admission of outside stock into a herd or area to which the regulations apply, and these conditions, except from a tuberculosis-free herd or area, should be very stringent for breeding cattle. As regards store cattle, probably a single negative test would be sufficient if properly segregated from the tuberculosis-free cattle.

A—*Accredited Herds.* An Accredited Herd is a tuberculosis-free herd which has been certified as such by the M. of A. & F. An owner makes voluntary application for assistance in clearing his herd from tuberculosis and agrees to accept the conditions laid down in

(4). The M. of A. & F. keeps a list of applications and makes selection partly by priority, but also gives preference to pedigreed and high-grade herds. The question of the accreditation of herds at present licensed for the production of Certified or Grade A T.T. Milk is a matter for negotiation between the M. of A. & F. and the Ministry or Department of Health with a view to mutual recognition of each other's certificates.

B—*Areas by Application.* In the first instance 75 per cent. of the cattle in a given area must be in herds which are accredited or in process of accreditation. The owners of these herds may then make application to have eradication compulsorily imposed on the whole area. This application must be made to the local authority, whose approval is necessary before the proposal is presented to the M. of A. & F. The M. of A. & F. gives preference to areas having geographical advantages. The local authority should bear a proportion of the expense of eradication.

C—*Compulsory Areas.* The cost under this part of the scheme is to be borne entirely by the M. of A. & F., and it is probably desirable that the other two parts should be in operation for some time before it is started. A beginning should be made at very few points, or even at only one, and subsequent work should spread by contiguity, absorbing A and B, until tuberculosis has been eradicated from the whole of Great Britain. Small islands might prove useful as a beginning. Difficulties will be found in the control of markets without interfering with trade, and with the admission of Irish cattle, which in some districts seems indispensable. The introduction of Irish cows should be allowed only under the same severe conditions laid down for other cows from outside the area, while Irish bullocks could probably be safely admitted after passing a single test. The control of markets must have in view the prevention of reintroduction of tuberculosis into an area by stock in transit, and the provision of safe places for the marketing of tuberculosis-free stock.

(5) *Maintenance.* Herds and areas from which tuberculosis has been eradicated must be kept tuberculosis-free. The M. of A. & F., as stated above, must direct the procedure. The funds for eradication must not be used for maintenance, or eventually they would all be devoted to this service and eradication would stop. Separate funds must be provided, and it is a matter for consideration whether they should be provided by the M. of A. & F., by local authorities, by the owner, or by some combination of the three.

GEORGE W. WEIR, President,
A. W. WHITEHOUSE, Secretary.

. . . . . .

The meeting of the West of Scotland Division, N.V.M.A. was held in the Glasgow Veterinary College on 16th August, 1929, when there were present Messrs. Weir, J. G. McGregor, Macfarlane, P. Wilson, James McDougall, Meikle, Whitehouse, David Brown, and J. F. Taylor.

President Weir occupied the Chair. The special committee appointed for the purpose, presented their draft scheme for the Eradication of Bovine Tuberculosis. This, after considerable discussion and with a few alterations, was adopted, and ordered to be printed for circulation.

A. W. WHITEHOUSE, *Hon. Secretary.*

The Scottish Branch Meeting was held on Saturday, 31st August, 1929, in the County Hall, Ayr. Mr. W. Nairn, the President, occupied the Chair. There was a fair attendance of members, and a number of visitors to the Congress took advantage of the invitation of the President to be present.

Major J. G. McGregor was introduced by the President, and asked to make some explanatory remarks in connection with the "Scheme for the Eradication of Bovine Tuberculosis" which had been referred to the Branch from the West of Scotland Division, and copies of which had been distributed.

Major MCGREGOR said: The West of Scotland Division has been impressed by the attention which the public in Scotland is giving to the problem of animal disease, and the demand that is being made for the prevention and eradication of bovine tuberculosis and abortion.

It will be within your knowledge that the Scottish Chamber of Agriculture discussed the subject at Inverness during the summer and again at Edinburgh this week. The National Farmers' Union of Scotland is also dealing with the matter. Several members of the Division attended the Conference on Bovine Tuberculosis called by the Corporation of the City of Glasgow some months ago, and noted the interest which the subject aroused among representatives of local authorities present. The Hannah Research Institute in Dairying, which has been founded near here, is already engaged in tackling the problem.

These are the considerations which prompted the West of Scotland Division to bring the subject of the eradication of bovine tuberculosis before the Scottish Branch. We believe the matter is of paramount importance to the profession, and if it does not give a lead, the initiative will pass into other hands, and the opportunity that now presents itself will be lost irrevocably.

The scheme which you have before you was prepared by a Committee of the West of Scotland Division, and is now put forward by the Division as a basis for discussion. It represents an attempt to formulate a plan that is capable of application, and is directed against tuberculosis alone. It was felt that for the present abortion should not be included.

State assistance is postulated; the amount which the Government is prepared to set aside for the scheme will determine the extent to which it can be applied. An annual appropriation of a few thousand pounds would enable a start to be made, and a gradually increasing number of accredited herds to be built up. In the early stages the scheme would be voluntary; in fact, it is possible that admission might be limited to certain classes of herds, for example, pedigreed and milk-recorded herds, if funds were limited in amount. These are the valuable herds in the country, and our position as a stock-breeding country depends greatly on their being healthy. The herds which are entirely recruited by breeding offer a hopeful field for eradication measures—whether by adopting the "Bang" system, or by slaughter and compensation, would depend upon the result of the initial test. The dangers and difficulties which confront the owner of a tubercle-free herd in maintaining its freedom are well known, and when a number of free herds are in a district, the desire to limit the chances of re-infection is met in the part of the scheme called "Areas by Application."

That part of the scheme entitled "Compulsory Areas" is based on the American plan and, at first sight, may appear revolutionary and foreign to our ideas. It is, however, supplementary to the two preceding parts, and necessary to form a complete scheme. A great deal of propaganda will be necessary before the agricultural world will accept the idea of Compulsory Eradication, but the best propaganda will be the successful functioning of the first two parts of the scheme.

In carrying out any plan there will be a great deal of work for both the private practitioner and the whole-time official, and both will serve the profession and their own interests best by working whole-heartedly for the success of whichever scheme is ultimately adopted.

The West of Scotland Division wish to emphasise their view that the time is now opportune for the consideration of the whole problem by the National Association in order that the views of the profession may be obtained, and a national scheme evolved which would give a lead to the growing body of public opinion that views with dismay the toll which tuberculosis of bovine origin takes of the infant life of the country, and the economic loss which its presence in our herds entails.

I, therefore, move "That the Secretary be instructed to ask the various Divisions constituting the Scottish Branch to consider the scheme proposed by the West of Scotland Division, express their opinion on the subject and report the results of their deliberations to the Branch Secretary before the 1st December, this date being suggested in view of the possibility of an early Government enquiry being instituted as the result of the action of the Scottish Chamber of Agriculture."

This motion was formally seconded by Dr. A. W. WHITEHOUSE.

The PRESIDENT invited any of the visitors present who cared to pass comment or ask questions connected with the scheme to consider themselves free to do so.

Active discussion followed, in which the following gentlemen (among others) took part: Messrs. Elphick, Rabagliati, Montgomerie, Jackson Young, Campbell, Waddell, the President and the Secretary. Dr. Whitehouse and Major McGregor replied to questions, and explained difficulties as they were brought forward. It was considered not desirable to report the full discussion.

Mr. ELPHICK moved, and Mr. CAMPBELL seconded, that a copy of the scheme be sent to each of the English and Irish Divisions for their information. This was agreed to by the members. It was decided that so soon as the reports have been received from the various Scottish Divisions a special meeting of the Branch should be called to hear the replies, and to decide what further steps should be taken.

Mr. ELPHICK, on behalf of the visitors present, thanked the Scottish Branch for the privilege of allowing them to take part in the discussion.

Preparatory to the foregoing business, the SECRETARY read an abstract of the Minutes of the last meeting—the full Minutes having been printed and published in the *Veterinary Record*. These were approved.

The PRESIDENT explained that, in view of the Annual Congress, it had been decided that only a formal meeting should be held this year, although there was one item of interest on the Agenda to be considered.

On the motion of Major J. G. MCGREGOR, seconded by Dr. WHITEHOUSE, Mr. Nairn was proposed for a further session as *President* of the Branch. There being no other nomination, Mr. Nairn was elected. He thanked the members for this further mark of their approval and undertook to accept office for another year.

On the motion of Principal O. CHARNOCK BRADLEY, seconded by the PRESIDENT. Mr. Miller was re-elected *Honorary Secretary*.

Next Meeting. Discussion arose as to whether the next meeting should be held in Perth or, on the proposal of Messrs. Meikle and Macfarlane, in Glasgow. Upon a show of hands, those in favour of Perth were in the majority. The date of the meeting and the subject for discussion were left to be settled by the President and Secretary.

Major MCGREGOR proposed a hearty vote of thanks to the President for his conduct of the meeting. This was carried.

WM. C. MILLER, *Hon. Secretary.*

North Wales Division, N.V.M.A.*

CLINICAL MATTERS CONSIDERED AT DENBIGH.

A meeting of this Division was held at the Bull Hotel, Denbigh, on Friday, July 26th. Professor J. Share Jones occupied the Chair, and there was a large attendance of members, including Messrs. Bate, Booth, Cane, Cartwright, Edwards, Llewelyn Jones, W. O. Jones, Lewis, Wynn Lloyd, Matthews, Dr. Montgomerie, Messs. Roberts, Savage and H. V. Hughes (Hon. Secretary). Messrs. Davis and Lawson attended as visitors. Apologies for inability to attend were read from Principal Hobday and Mr. W. Hughes.

The minutes of the previous meeting were taken as read and were confirmed.

Correspondence.—Acknowledgments were received from:

1. Mrs. Lloyd Jones, of a letter of condolence from the Society.

2. The National Horse Association, of the Society's subscription of £1 1s. 0d. Literature received from the Association was laid on the table.

3. The R.C.V.S. and N.V.M.A., of resolutions sent from the Society.

4. The Victoria Veterinary Benevolent Fund, of the sum of 15s., being the amount collected at the last meeting. The Collecting Box of the Fund was passed round during the present meeting and at the close the President announced that 27s. had been contributed.

A letter from the Council of the N.V.M.A. with reference to the measures adopted for controlling sheep scab was read, and after some discussion it was resolved that a committee consisting of Messrs. Wynn Lloyd, Roberts, Savage and Wynne be appointed to consider the matter and report to the next meeting.

The question of the alteration of Article 59 of the Association's Articles of Association was next considered and it was agreed to leave the decision in the hands of the Council of the N.V.M.A.

Nomination of New Member.—The President said he desired to propose, and the Secretary to second, the nomination of Mr. W. R. Davis, of Rhyl, as a Fellow of the Society. The announcement was greeted with applause.

* Received on August 23rd.

"*Some Clinical Cases.*"—The President then said that it was his pleasure to call upon Mr. LLEWELYN JONES to place before them some of his wide and varied experience in the form of a paper entitled "Some Clinical Cases."

Mr. Jones, who was warmly applauded on rising, said that it was with great pleasure that he had written up some clinical cases for the consideration of the members that afternoon, and he hoped that his paper would prove of interest to the meeting.

(This paper is reproduced in the Clinical and Case Reports Section of this issue.—ED.)

At the conclusion of the paper an interesting discussion ensued, the President, Messrs. Booth, Bate, Wynne, Wynn Lloyd, Roberts and Dr. Montgomerie taking part. The meeting then adjourned to Mr. Jones' yard, where a number of interesting cases were on view, including:—

(1) The head and neck of the heifer referred to in Case No. 7. On opening into the swelling in the neck a large tumour, resembling a fibroma, was revealed.

(2) A retriever bitch with a vaginal tumour.

(3) An intestinal calculus taken from a grocer's horse and weighing approximately 12lbs.

(4) A terrier which, after being almost completely devoid of hair owing to follicular mange, had been cured in about six weeks by the systematic and careful application of a dressing consisting of linseed oil and sulphur.

(5) The heart and lungs of a cow which had been affected with pericarditis.

The PRESIDENT, on behalf of the members, expressed thanks to Mr. Llewelyn Jones for his instructive paper and for his efforts in securing such a wealth of clinical material for their examination. This terminated the meeting and the members, after visiting the grounds of Mr. Jones' house, partook of tea together.

H. V. HUGHES, *Hon. Secretary.*

REVIEW.

[**The Way of a Man with a Horse.** A Practical Book on Horsemanship, by Lieut.-Col. Geoffrey Brooke, D.S.O., M.C., author of "Horse Sense and Horsemanship of To-day"; Veterinary Notes by Colonel A. G. Todd, C.B.E., D.S.O., R.A.V.C.; and a Chapter on Pig-sticking, by Lieut-Col. Arthur Brooke, D.S.O., M.C., R.A. Published by Seeley, Service & Co., Ltd., 196 Shaftesbury Avenue, London, W.C.2. Price, 21s. nett].

In all careers, professions or businesses, in all sports and pastimes, an obligation rests with the experienced and the practised to impart to the beginner and the uninitiated the benefit of their experience and the end results of a life-long study and practice. The management of horses and ponies, their training to befit them and to perfect them in the sports and pastimes in which they take part, their correct feeding under all circumstances of work and rest, their housing, and the maintenance of their health, follow definite principles which have been tested and tried out in the school of experience. It is only in such a school that the perfect horse and the perfect horseman are made.

The enthusiast in horsemanship, the horse lover in general, and the novitiate eager to learn will therefore be grateful to Lieut.-Colonel Geoffrey Brooke and his collaborators for their valuable addition to the Lonsdale Library, which has been initiated to combine in interesting and useful form complete compendia of practical information on all sports and games. As Lord Lonsdale in his dedicatory introduction of the Library aptly says:—"No pains have been spared to make the text and the illustrations as full and representative as possible, and if the various volumes succeed in their double appeal to the tyro and to the expert, the Library will have fulfilled the purpose of its editors, which is, to make it complete."

It is quite impossible in the limited extent of a review to make allusion to all points dealt with in the book, but every part of it is clearly expounded in a practical manner, which is so essential in the handling of animals whether for utility or pleasure. Moreover, the text is written in such clear and simple language that it may be understood by all.

Commencing with an appreciation of the horse and horsemanship as enunciated by Xenophon, and an allusion to the varying temperaments in horses, which in themselves are study problems, the writer outlines a rational stable routine, how to go about a horse, stable utensils in use, grooming, watering, feeding, and articles of diet with their preparation and administration as to approximate amounts per feed, the effects of overfeeding, clothing, clipping, exercise, saddlery, etc. In two excellent chapters the science and art of riding and the sympathetic use of hands and legs are dealt with, followed by practical lessons in jumping and the obligations of the fox-hunter in riding to hounds, all of which are intended for the instruction of the novice. This is followed by four chapters on common ailments by Colonel A. G. Todd, touching on those matters of disability which all horsemen should be able to recognise, and in fairness to the horse to prevent as far as possible or seek the aid of a veterinary surgeon. A guide to buying a hunter, bits and spurs, detail of riding school training, schooling of horses over fences, racing over fences, training for show jumping, and the management of difficult horses are the subjects of other chapters. A very useful chapter on polo ponies, the type desirable, the methods pursued in the training of ponies through the stages of raw, previously ridden, first season, to the fully made and tournament animal will be found of great help to the polo enthusiast. And, lastly, the book includes a chapter by Lieut.-Colonel Arthur Brooke on pig sticking—the type of horse used, the rules and etiquette of the sport, and how best to "ride a pig," which will provide useful reading for those who aspire to that fine sport of India.

The book is interleaved with over 90 illustrations, is nicely got up, and should prove a valuable addition to both public and private libraries. J. M.

Experiments in the wintering of outdoor and indoor cattle have been carried out at the North of Scotland College of Agriculture farm at Crailstone, near Aberdeen. Two groups of ten cattle of similar weight were chosen. Both groups were fed on turnips and straw. The outdoor lot had about half as much again of turnips as the indoor group. The first weighing resulted in the indoor group gaining 11 cwts. 3 qrs. 10 lb., while the out-wintered group gained 15 cwts. 3 qrs. 26 lb. After they went out on the grass the indoor lot lost 4 cwts. 3 qrs. 8 lb. in a week, but afterwards they made rapid headway. At July 31st the total weight gained was 29½ cwts. for the indoor group and 35 cwts. 1 qr. 12 lb. for the outdoor group.

NOTES AND NEWS.

The Editor will be glad to receive items of professional interest for inclusion in these columns.

Diary of Events.

Sept. 23rd—Meeting of the Editorial Committee, N.V.M.A., 10 Gray's Inn Square, London, at 4-30 p.m.

Congress Number of the "Record."

Our next issue, which will be considerably enlarged, will be devoted to reports of proceedings of the highly-successful Congress held by the Association at Ayr, from August 31st to September 6th.

Commencing with the masterly address delivered by Dr. Charnock Bradley, the retiring President, the Congress Number will also include, among many other interesting features, an art-plate photograph of the "record" attendance, a portrait and biography of the new President (Mr. G. P. Male), a report of the important discussion on the nomenclature of the milk grades, Professor Buxton's valuable lecture on Tuberculin Testing and detailed accounts of the operations, together with full reports of the annual general meeting, and of the ceremonial and social functions. The first of the reports of discussions on the papers presented to Congress (that on Mr. Powley's paper on Foot-and-Mouth Disease) will also be inserted.

The late Major-General Sir Frederick Smith.

In the course of its announcement of the death of Major General Sir F. Smith, previously recorded in our columns, the current issue of the *Royal Artillery Regimental News* says: "It will interest gunners, especially Horse Artillery men, to know that he was the last veterinary surgeon to wear the "jacket." He was a well-known figure on Parade at Woolwich about 1877—78 in Horse Artillery uniform, but with a white crossbelt and yellow plume. He was mainly responsible for the creation of the veterinary cadres of the Territorial Force, in collaboration with Lord Haldane and the creation of the Army Veterinary Corps. It was his work which led up to the granting, in 1913, of independence to the Army Veterinary Service."

Personal.

Marriage.—Hudson—Davies. September 9th, at St. Andrew's Church, Sharrow, Sheffield, by the Rev. W. H. Wagstaff, John Richard Hudson, B.Sc., M.R.C.V.S., of Kabete, Kenya Colony, son of Mr. Richard Hudson, F.R.C.V.S. and Mrs. Hudson, of St. Michael's Place, Retford, Notts., to Margaret Edith, eldest daughter of Mr. G. R. Davies, B.Sc. and the late Mrs. Davies, of Brentwood House, Ryle Road, Sheffield.

Irradiated Milk as a Cure for Rickets.

"The Medical Officers of Health for the City of London went recently to Newbury to examine the first installation for the irradiation of milk, to be established in this country," says the *British Journal of Bio-physics*. "An experimental plant has been installed on a dairy farm at Compton, near Newbury, consisting essentially of a high-tension electric lamp, emanating U.V. rays. The rays pass through a tube, through which the milk is pumped, and each portion of the milk is subjected to the rays for the period of eighty seconds. Experiments carried out in Berlin, Munich and Frankfurt have proved that this irradiated milk is of great value to children suffering from rickets. Dr. Chalmers Watson has achieved good results by adding the irradiated liquid in the proportion of one-third or one-half to ordinary milk; thus the expense of this added milk amounts to only 6d. a week per head, and it can be sold at the price of the best certified milk. The irradiated milk is not changed either in taste or appearance.

. . . . . .

Those of our readers who desire to visit the International Exhibition and Conference of Light, Heat and Sound in Medicine, Surgery and Hygiene, which is to be held at the Central Hall, Westminster, from September 23rd to 26th, can obtain free tickets, and all information concerning the conference, from the Organising Secretary, 46 Strand, London, W.C.2.

CORRESPONDENCE.

Letters to the Editor should reach the Office not later than by the first post on Tuesday morning for insertion in following Saturday's issue.

All correspondence must bear the name and address of the contributor for publication.

The Editor does not hold himself responsible for the opinions of his correspondents

"Canine Typhus" in the Cat?

To the Editor of the Veterinary Record.

Sir,—It is with some temerity that I take up my pen to write, as, having only been qualified some two years, my observations may be of no value.

The subject of the case, a cat, one year old, was taken ill last Thursday. Little notice was taken until to-day, Monday. When seen, the animal was in a very emaciated condition, unable to stand, the anterior portion of the tongue appeared dark brown, and the usual odour of Stuttgart dog disease was observed. Further, on enquiry, I was informed that the animal had passed a lot of blood *per rectum* during the day. Upon my advice the animal was destroyed. The question is, was it a case of canine typhus in the cat or is the condition fairly common?—Yours faithfully,

H. E. Smithers.

Conniston, Whitchurch Lane, Edgware.
9th August, 1929.

"Verse, a breeze mid blossoms straying." (*Coleridge*).

To the Editor of the Veterinary Record.

Sir,—Would you permit me publicly to thank the contributor of the excellent extracts of verse and his arrangement of them, in your issue August 24th, 1929, column1, p. 718, No. 34, Vol. ix., entitled "Burns and the Congress."

The sparkling wit of the chosen passages, coupled with the pleasant applications to events of the Ayr Congress, are truly—"Verse, a breeze mid blossoms straying."

Surely, they refresh the mind, brighten the time, broaden the outlook, and give a mental relaxation for the better appreciation of the more serious reading of the *Veterinary Record*:—

"With antic Sports and Blue-eyed Pleasures
Frisking light in frolic measures."—*Gray*.

As verse was the fore-runner of prose and the fount of English from the Epic of Beowulf to Kipling'sRecessional, we do hope that your journal will continue to relieve the more scientific study by such happy contributions as "Burns and the Congress."

"Sound sleep by night; study and ease
Together mix'd; sweet recreation,
And innocence, which most does please
With meditation."—*Pope*.

Yours very truly,
W. J. Cooper, Captain R.A. (retd.).

3 Somers Road, Reigate.
September 12th, 1929.

The Editor acknowledges the receipt of the following:—

Communications from Major T. Dalling (Beckenham), Mr. J. Howard Jones (Glamorgan), Professor James Macqueen (London), Mr. T. F. Prime, (Upper Norwood), and Lt.-Col. T. D. Young (London).